# MACHINE SEWING

SINGER

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## SINGER SERVICE TO SCHOOLS

An intensive course of practical machine operation and adjustment for sewing teachers, varying from one to ten periods of one hour to one day each, according to local needs and conditions.

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The First Practical Sewing Machine—1851

# Machine Sewing

A TREATISE

ON THE CARE AND USE OF

## FAMILY SEWING MACHINES

AND

THEIR ATTACHMENTS

◆

SPECIALLY PREPARED

FOR TEACHERS OF HOME ECONOMICS

◆

*Price $1.00*

*(Gratis to Teachers of Home Economics)*

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## CONTENTS

(For Detailed Index see Pages 152-158)

Chapter 1. General Instructions for the Care and Operation of Family Sewing Machines.

Chapter 2. Stitch Formation by the Various Types of Singer Machines Most Commonly Used.

Chapter 3. The Binder and its Many Uses as Applied to Family Sewing

Chapter 4. The Foot Hemmer and the Adjustable Hemmer.

Chapter 5. The Practical Use of the Tucker.

Chapter 6. The Ruffler.

Chapter 7. Special Labor-Saving Attachments for Sewing Machines.

Chapter 8. Electric Machines, Motors and Lights.

Chapter 9. The "Student" Model Singer Electric.

## PREFACE

The purpose of this book is to assist teachers of home economics in their work relating to the care and more effective use of family sewing machines.

Although the sewing machine is a comparatively modern invention, it has proven such an invaluable time and labor saver that it is found in nearly every home. Few, however, realize its full possibilities and, through lack of this knowledge, fail to obtain the large measure of usefulness the machine is capable of yielding. With proper instruction in the use of the machine and its attachments and with a little practice, anyone can produce economically the many items of clothing and household equipment demanded by modern standards of living.

Special attention has been given in the following pages to methods which will produce well-constructed, nicely-finished garments and effect a saving in time and labor, which is more essential to-day than ever before. Hand sewing is too laborious and time consuming for this fast-moving age and cannot result in that smart tailored finish so easily obtainable with the sewing machine.

Beginning with the important fundamentals in the proper care and operation of the sewing machine itself, the student is led progressively through the many uses of the regular attachments which form part of its equipment, then to special attachments which may be purchased as extra equipment and practical suggestions are made for the application of these principles to the construction and trimming of garments most frequently made at home. Finally a chapter is devoted to that important new development, the electric sewing machine, which means as much to the woman of to-day as the advent of the treadle machine meant to the woman of over three quarters of a century ago.

Each chapter presents material suitable for classroom instruction and the samples illustrated are suitable projects for subsequent practice work.

We trust this book will be found of practical value in the important work of instructing the girls of to-day in better methods of home sewing.

SINGER SEWING MACHINE COMPANY

INCORPORATED

CHAPTER 1

# GENERAL INSTRUCTIONS FOR THE CARE AND OPERATION OF FAMILY SEWING MACHINES

## Treadle Practice for Beginners

The beginner should learn the various parts of the sewing machine and the purpose of each in order to give the machine proper care and to secure the best results from it. It is essential that treadle practice precede actual sewing on the machine. For this practice the belt should be taken off the balance wheel and the upper thread and shuttle removed from the machine. See Fig. 29. The operator should be equipped with a chair high enough to allow the feet to be placed comfortably on the treadle and should sit squarely in front of the machine directly in line with the needle.

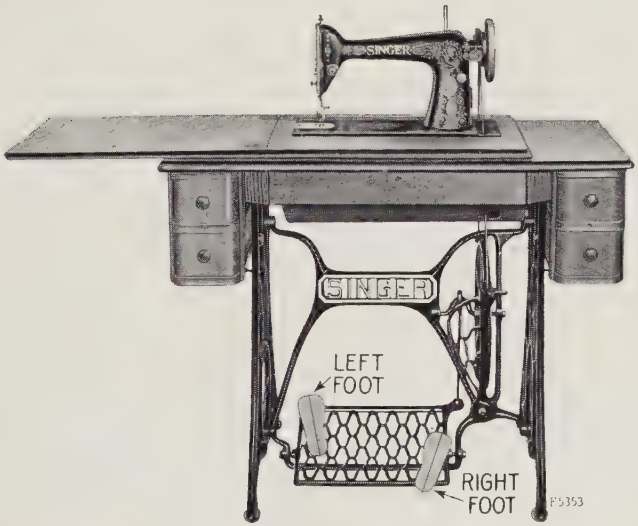



Fig. 1. Proper Position of the Feet for Treadling

The most comfortable and effective position for treadling is with the ball of the left foot upon the upper left corner of the treadle and the heel of the right foot on the lower right corner. See Fig. 1. Treadling in this position takes very much less effort than when the feet are placed in any other position.

As soon as proper motion of the treadle has been learned, place the belt on the balance wheel and continue practice until it is possible for the operator to start the machine and keep it running with ease. It is advisable to give the balance wheel a start by pulling the belt sharply toward the operator, at the same time pressure is applied to treadle.

The balance wheel must turn in the direction which will enable the feed to carry the material backward away from the needle with each succeeding stitch. On nearly all family sewing machines of the lock-stitch type the balance wheel turns towards the operator.

During treadle practice and at all other times when a sewing machine is run without sewing, the needle should be unthreaded and the presser foot raised so it does not come in contact with the feed.

### Practice Straight Stitching with Paper

Straight stitching is the next practice operation for the beginner.

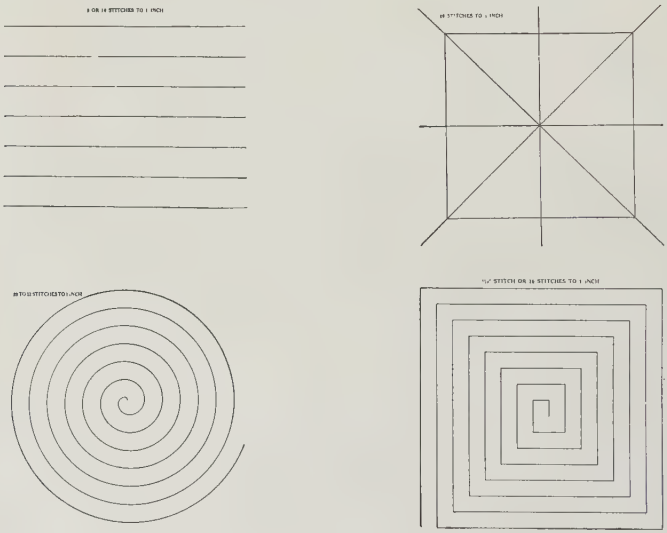


Fig. 2. Patterns for Practicing Stitching

It is well to practice with paper and without thread until the operator can follow a line with ease before actually sewing, as crooked stitching will ruin a garment. Let the lines on the paper represent basting and practice following this line with stitching until perfect results are obtained. See Fig. 2.

When about to turn a corner, stop the machine with the needle in the paper, raise the presser bar and turn the paper ready to stitch along the next side. This gives practice in turning corners, as well as in making a straight line of stitching.

By following the above suggestions the beginner will acquire a sufficient knowledge of speed and control of the machine to enable her to proceed with actual stitching.

## PREPARING THE MACHINE FOR SEWING

### Adjusting the Stop Motion Screw for Winding Bobbins

In preparing to sew with the machine, first see that the bobbin is wound with thread of suitable size for the material to be sewn.

It is necessary to understand the stop motion of the machine by which the balance wheel can be released when winding bobbins, thus permitting the winder to operate without running the stitching mechanism. To release the stop motion, hold the balance wheel and turn the stop motion screw over toward you as shown in Fig. 3.

Fig. 3. Releasing the Stop Motion

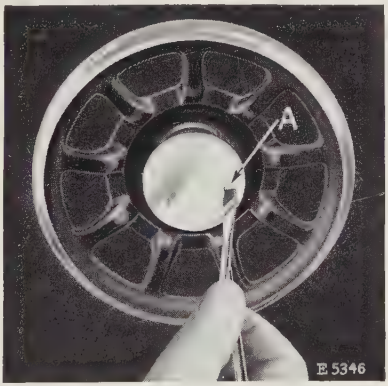



Fig. 4. Removing the Stop Screw

If the machine does not stop when the stop motion clamp screw has been released, remove it by taking out the small screw A (Fig. 4) which holds it in place, take off clamp screw as shown

in Fig. 5, and examine the position of the clamp washer shown in Fig. 6. The two inner prongs are not flat but are bent outward on one side. The correct position of the clamp washer is against the balance wheel hub with the inner prongs in the slots of the bushing, but projecting outward to make contact with the clamp screw. When the washer is incorrectly inserted, with the two inner prongs projecting toward the bushing, the clamp stop motion will not release the sewing mechanism.

Fig. 5. Removing the Clamp Screw

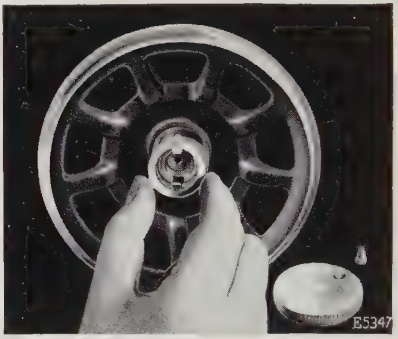



Fig. 6. Inspecting and Replacing the Clamp Washer

Sometimes it is found necessary to change the position of the washer by giving it a half turn before replacing the clamp screw.

### Wind the Bobbins Evenly

A bobbin must be wound evenly to work properly in the machine. Great care should be taken in winding bobbins to have the thread placed on the bobbin smoothly and evenly, and the bobbin should never be wound so full that it is tight in the bobbin case or shuttle. See Fig. 7. A correctly wound bobbin will insure a smooth-running thread from the shuttle and will prevent an uneven stitch which may occur if the thread is placed on the bobbin unevenly.

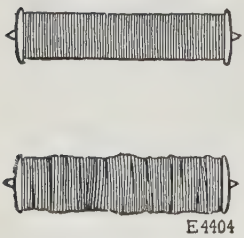



Fig. 7. Upper Bobbin Correctly Wound. Lower Bobbin Incorrectly Wound

If the thread winds to one side of the bobbin, the guide which carries the thread from the bobbin winder to the bobbin may be bent a trifle, away from the side at which the thread piles up, with a pair of pliers. See Fig. 8. Care should be taken

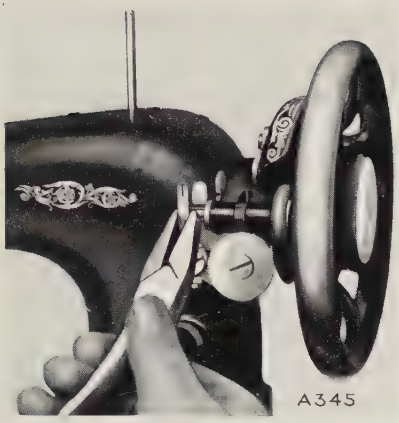



FIG. 8. ADJUSTING THREAD GUIDE

when making an adjustment of the winder not to bend it too far.

Always make it a point to have a sufficient quantity of bobbins on hand so that it is unnecessary to wind one color of thread on a partly wound bobbin of another color. Bobbins wound in this manner are often uneven, and the ends of the threads become tangled, causing no end of trouble in the bobbin case.

### Increasing the Pressure on the Bobbin Winder

If the pressure of the rubber ring against the hub of the balance wheel is not sufficient to wind the bobbin, loosen the adjusting screw (see Fig. 9) and press the bobbin winder lightly until the rubber ring is in contact with the hub of the balance wheel, then tighten the screw. This type of winder is found on Singer 66, 99, 115 and 15-30 machines.

If the rubber ring becomes worn or if oil has been allowed to come in contact with the rubber, the ring will not have the proper contact with the wheel and will slip when attempting to wind a bobbin. A worn or oily ring should be replaced.

The bobbin winder on the Singer 66, 99, 101, 115 and 15-30 machines has an automatic stop which releases the winder from the balance wheel when the bobbin has been wound sufficiently full.

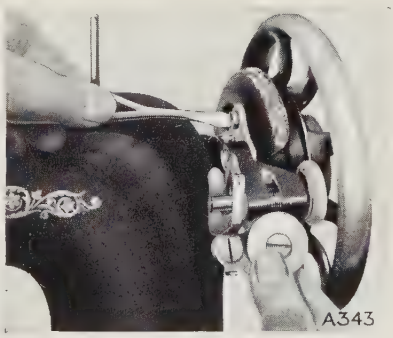



FIG. 9. ADJUSTING PRESSURE ON BOBBIN WINDER

### Proper Needle and Thread Important

A perfect stitch can be obtained only when the thread is selected to suit the fabric which is to be stitched and the needle is the correct size for the thread. If the needle is too fine for the thread and the material to be sewn it is quite likely to break when crossing a seam. If a large needle is used on fine material

the perforations made by the needle will show on the finished work. A table of correct needles for the various sizes of silk and cotton is given in the instruction book for each machine. This table should be carefully followed when ordering needles and when changing them for various classes of work.

**RELATIVE SIZES OF NEEDLES AND THREAD**
**For Singer Lock-Stitch Machines Nos. 15, 66, 99, 101, 127 and 128**
**(Class and Variety of Needles Used, 15 x 1)**

| SIZES OF NEEDLES | CLASSES OF WORK | SIZES OF COTTON, SILK OR LINEN THREAD |
|---|---|---|
| 9 | Fine Muslins, Linens, Georgette Silk, etc. | 100 to 150 Cotton<br>OO & OOO Silk |
| 11 | Lawn, Batiste, Organdie, Linens, Silks, etc. | 80 to 100 Cotton<br>O Silk |
| 14 | Shirtings, Sheetings, Ginghams, Heavy Silks, and for general household stitching. | 60 to 80 Cotton<br>A & B Silk |
| 16 | Heavy Muslins, Crash Toweling, Woolen Goods and Heavy Silks. | 40 to 60 Cotton<br>C Silk |
| 18 | Tickings, Very Heavy Muslins, Woolen Tweeds, and general stitching on heavy garments. | 30 to 40 Cotton<br>D Silk |
| 19 | Very Heavy Woolens, Tickings, Seaming Coats, Trousers and heavy garments. | 24 to 30 Cotton<br>E Silk<br>60 to 80 Linen |
| 21 | Awnings, Rugs, Tents, and very heavy materials. | 40 to 60 Linen<br>or very<br>Coarse Cotton |

NOTE: Care should be taken to see that only genuine Singer needles are used in Singer machines.

For Singer chain-stitch machines of the 24 Class use needles specified in the table on page 52.

FIG. 10. GAUGE FOR CHECKING LENGTH OF NEEDLE

It is essential that the distance **from the top of the needle to the top of the eye** be correct, but the distance from the eye to the point may vary slightly. To test a needle for length lay it over Fig. 10 with the top just touching line A. The top of the eye should then be directly above line B.

## Testing a Needle

A perfect needle can be determined by placing the flat side of the needle on the slide plate of the machine or any other perfectly flat solid surface. Hold the needle flat to the plate and the plate up to the light as shown in Fig. 11. A perfect needle will show an even amount of light under it and the point will be in line with the shank, while a crooked or bent needle will show closer to the plate or further from it at the point.

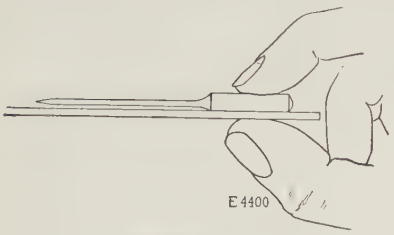



Fig. 11. Testing a Needle for Straightness

## Setting the Needle Properly

Turn the balance wheel over towards you until the needle bar rises to the highest point. Loosen the thumb screw of the needle clamp, release and remove the old needle from the machine. Place the new needle in the needle clamp, making sure that the flat side of the needle is against the needle bar. In other words, have the flat side of the needle to the right. Push the needle up as far as it will go and tighten the clamp. See Fig. 12.

Fig. 12. Setting the Needle in the Machine

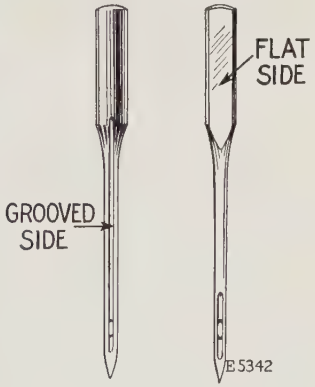



Fig. 13. Flat and Grooved Sides of Needle (Enlarged)

You will note from Fig. 13 that the side of the needle with the flat on the shank has a short groove at the eye while the other side has a long groove. The thread must lie in this long groove when sewing. If the needle is not placed correctly in the machine it will not sew.

## The Necessity for Proper Tensions

The tensions on the sewing machine must be adjusted to suit various fabrics. There are two tensions, the upper and the lower. The upper tension controls the thread from the needle, while the lower tension controls the thread from the shuttle or bobbin case.

The definition of the word tension as given in the dictionary is: "stress by pulling." It is the pulling of the threads together that completes a stitch on the sewing machine. After the needle thread passes around the shuttle, both upper thread and lower thread must be pulled to take up the slack and complete the stitch by locking both threads together. If both are under proper tension, the lock occurs in the center of the material being sewn and a perfect stitch is formed as in Fig. 14.

Fig. 14. Both Tensions Correct

If the tension on the needle thread is too tight, or if that on the bobbin thread is too loose, the needle thread will lie along the upper surface of the material as illustrated in Fig. 15.

Fig. 15. Tight Upper Tension

If the tension on the bobbin thread is too tight, or if that on the needle thread is too loose, the bobbin thread will lie straight along the under side of the material as shown in Fig. 16.

Fig. 16. Tight Lower Tension

If too tight a tension is used on fine material the threads may break when the material is pressed flat. A bias seam will pucker if the tension is tight. If the tension on a flat seam is too loose there is danger of the thread being pulled out. A long stitch and a loose tension are often used when basting, so that the stitches may easily be pulled from the material.

## How to Adjust the Tensions

The tension on the upper thread is regulated by turning the nut E, shown in Fig. 17, to the right to tighten and to the left to loosen.

Tension on the under thread is regulated by the screw which holds the spring under which the thread passes, on the long shuttle or the round bobbin case. Turn this screw to the right to tighten and to the left to loosen. Use the small screw driver for this purpose.

If there is difficulty in tightening the under tension there may be a knot of thread caught under the spring on the shuttle or bobbin case. Loosen the tension screw sufficiently, release the knot and remove it.

Fig. 17. Adjusting the Upper Tension

The tension on the needle thread should be regulated only when the presser bar is down. If you are using the correct thread for the needle the tension may be regulated by adjusting until the thread just barely bends the needle when the thread is pulled through as shown in Fig. 18. The under thread should be ad-

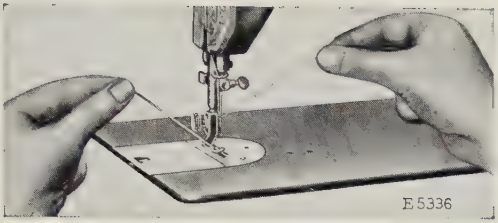



FIG. 18. TESTING UPPER AND LOWER TENSIONS TOGETHER

justed to pull as near like the upper thread as possible. When puling the under thread care should be taken to see that it is pulling free from the presser foot. (See Fig. 18). Fine materials require a light tension, while heavy materials require more tension to produce a perfect stitch.

### Preparing to Sew

Pull sufficient thread through the needle to start sewing, hold the end of the thread in the left hand and with the right turn the balance wheel over until the needle goes down and the under thread is pulled up through the needle hole in the throat plate. (See Fig. 19). Lay both ends back under the presser foot before starting to sew.

FIG. 19. PULLING UP UNDER THREAD

FIG. 20. BEGINNING A SEAM

The edge of the garment to be stitched should be placed just far enough under the presser foot so that the first stitch may be taken in the material. Never place the material so far in front of the needle that the first stitch will not be taken in the material, as this will allow the thread to become caught in the bobbin case; also the material may not feed under the foot properly unless the edge has been caught with the needle. Always lower the presser bar before starting to sew, bringing the tension into operation and preventing the thread from being caught in the bobbin case. See Fig. 20 for the proper starting of material under the presser foot.

## Finishing a Seam

When finishing a seam, never sew beyond the end of the material. Stop the machine by placing the hand on the balance wheel shortly before the end of the seam is reached. This will prevent the thread from becoming caught in the bobbin case. See Fig. 21.

Fig. 21. Finishing a Seam

Do not attempt to release the material from the machine until the take-up lever is at the highest point. See T, Fig. 27. When the take-up is in this position and the presser foot is raised, the tension is released. Always take the material from the machine by pulling it straight back away from you. This will prevent the needle from becoming bent or broken.

Always have a sufficient length of thread to prevent its pulling through the needle when you start to sew the next seam. This may be provided for by pulling the material back from you far enough to allow the upper and lower threads to enter thread cutter I, Fig. 19. Hold thread with both hands and cut with a quick downward motion.

## Hints for Sewing Various Seams

Always keep the material to the left of the presser foot, allowing the seam to extend to the right. This helps to prevent machine oil from soiling the goods and allows greater freedom of feeding than when the garment is allowed to pass under the arm of the machine.

In stitching a skirt, all patterns are made so that the seams must be stitched from the top down. This is true of every seam in a garment. In stitching a blouse the shoulder seams must be stitched from the neck down, and the under-arm and sleeve seams must be stitched from the armhole down. This is also true when sewing bias seams on a skirt. It must be stitched from the waist line down in order that the pattern will come together correctly.

When sewing a bias edge to a straight edge, place the straight edge against the feed. Hold the bias edge toward you in order to adjust and ease the fullness in to prevent its stretching.

## Stitching a Straight Seam

To give satisfaction a sewing machine must sew straight. To test a machine for this feature take a piece of muslin of double fold about four inches wide and six inches long. Start sewing in the center, as shown in Fig. 22, and run the machine without guiding the material. If the machine is perfect and the needle is perfect it will sew straight, but if the needle is bent or the foot out of level the stitching will appear as shown in Fig. 23.

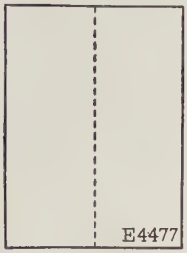



Fig. 22
Straight Sewing

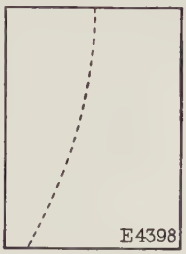



Fig. 23
Crooked Sewing

Any machine that will not stitch approximately straight when equipped with a perfect needle (see page 13) should be reported to the shop from which it was purchased and an adjuster will be sent to correct the trouble.

It is impossible to do satisfactory sewing on a machine that will not sew approximately straight, as the operator must continually guide the material to keep the line of stitching desired.

## The Cloth Guide

The cloth guide is a part of the sewing machine equipment and is a help in straight stitching. The guide is fastened to the machine by means of the thumb screw as shown in Fig. 24. It can be adjusted to various distances from the needle as desired.

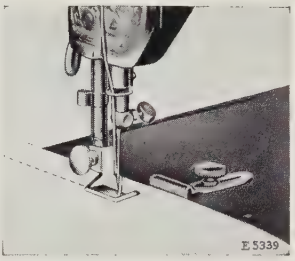



Fig. 24. Cloth Guide

The first practice with the machine after understanding the threading, tensions, etc., is straight stitching. At first use strips of paper without thread and then sew on muslin, stitching several rows close together. Always use a double piece of material when practicing stitching.

## Regulating the Length of Stitch

The length of stitch should be regulated to suit the thread and material that is to be used. In other words, after giving all other conditions careful attention do not spoil your sewing by using a stitch that is too long and coarse.

When stitching fine material use a fine needle, fine thread and a short stitch. Heavy material requires a coarse needle and thread and a longer stitch.

FIG. 25. STITCH REGULATING SCREW ON SINGER 66, 99 AND 127 MACHINES

The stitch on the 66, 99 and 127 models is regulated by turning screw S, Fig. 25, to the right to lengthen the stitch and to the left to shorten it. The stitch on the 15-30 and 115 models is regulated by screw S, Fig. 26, in a slot on the arm near the bobbin winder. To lengthen the stitch loosen the screw and move downward. To shorten the stitch move the screw upward. When the desired length of stitch is obtained tighten the screw.

FIG. 26. STITCH REGULATING SCREW ON SINGER 15-30 AND 115 MACHINES

The 101 Class Machines are equipped with an automatic stitch regulator and the desired length of stitch is instantly obtained by turning a numbered dial to the proper point. (See F. 3, Fig. 26A). This can be accomplished while the machine is in operation.

About twenty stitches to the inch makes a desirable stitch for ordinary sewing. To count the stitches, sew on a double thickness of muslin, measure off one inch with a ruler and count the stitches.

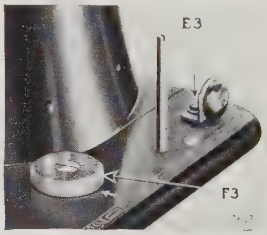



FIG. 26A. STITCH REGULATOR ON 101 MACHINES

## Adjusting the Pressure on the Presser Bar

FIG. 27. REGULATING THE PRESSURE

The presser foot rests on the feed dog, holding the cloth in position while the machine is sewing. The pressure should be regulated according to the fabric to be stitched, heavy enough to prevent the material from rising with the needle and still enable the work to feed along smoothly. A pressure that is too heavy will cause the machine to run hard and will leave the print of the feed on fine materials.

Increase the pressure by turning the adjusting screw to the right. Lighten the pressure by turning the adjusting screw to the left. (See Fig. 27). The heavier the material the more pressure is required. Fine materials require a light pressure.

## Cleaning and Oiling

Sewing machines require daily oiling and cleaning if they are used continuously all day. If used moderately, a few hours a day, oiling and cleaning once or twice a week is sufficient. A sewing machine, like all other machinery, will not give proper satisfaction if the working parts are allowed to become dry or gummed with a poor grade of oil. A sewing machine that has not received the proper care will run hard and considerable energy is wasted by using a machine in this condition. Always remove dust, lint, threads, etc., before oiling any part of the machine or stand, especially in and around the shuttle race.

## Oiling the Machine Head

The equipment necessary for the proper cleaning of the machine consists of a piece of cheese cloth, a large screw driver, a small screw driver and a stiletto.

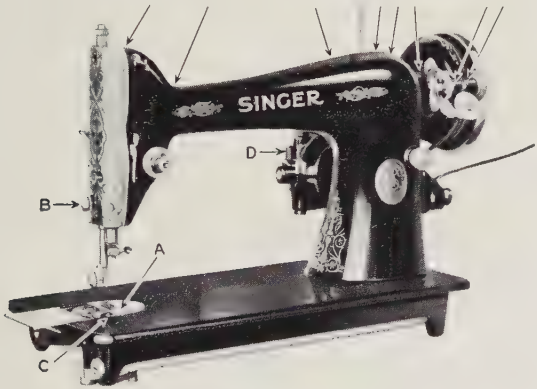



Fig. 28. Cleaning and Oiling the Head

Care should be taken to use high-grade machine oil and one drop should be applied to each bearing and each point where there is any friction. It is poor economy to use oil of doubtful quality, as it may gum on the working parts and make necessary a complete overhauling of the machine by a competent repair man.

It is best to be safe and purchase oil from a sewing machine manufacturer interested to have it specially prepared for sewing machines and guaranteed not to gum. Many household oils are not suitable for sewing machine use.

When planning a thorough oiling, remove the upper thread, slide plate, bobbin, bobbin case, needle and presser foot. Take out the screws in the throat plate (the plate A directly under the presser foot through which the needle passes, Fig. 28) and remove the throat plate. This will enable you to clean and oil the shuttle race. On the 66 and 99 Class machines the oscillating hook is lubricated by oil from a piece of red felt (C, Fig. 28), which touches the top of the hook. This felt wiper should be kept moist at all times.

Fig. 29. The Belt Shifter

The face plate should also be removed by taking out screw B (Fig. 28) to give access to the oiling points on the needle bar, presser bar and thread take-up. Put one drop of oil into each oil hole and joint.

Release the belt from the band wheel by turning the lever of the belt shifter, Fig. 29, to the left while the machine is running. To replace the belt after releasing, place the feet on the treadle and start the band wheel in the proper direction. The belt will be thrown on the wheel automatically. Never throw the belt off to the left side of the band wheel, as it is difficult to replace it from this side.

After releasing the belt, turn back the head of the machine in order to reach the oiling points on the under side. By turning the balance wheel slowly you will be able to observe all working parts. Place a single drop of oil at each point, as this is sufficient to lubricate the machine. After oiling all points on the under side, lower the head into sewing position and oil each point on top of the arm. Wipe away all surplus oil, thread up the machine and stitch on a waste piece of material until all surplus oil that might drip onto the goods being sewn has been worked out.

When a machine is used frequently it is not necessary to remove the throat plate, slide, bobbin and bobbin case each time the machine is oiled, but this should be done whenever a thorough cleaning and oiling is required.

## Oiling the Bobbin Winder

To insure smooth running of the bobbin winder, the oiling points should be observed and care taken to see that they are not neglected when the rest of the machine is oiled. See Fig. 30. If the winder is to be used directly after oiling, do not sit in front of it. If too much oil has been applied it is liable to throw and soil your clothes. Do not allow oil to come in contact with the rubber ring on the bobbin winder, as oil softens the rubber and causes it to slip on the hub of the balance wheel. When this happens, the only remedy is to replace the ring.

Fig. 30. Oiling the Bobbin Winder

## Oiling the Stand

All working parts of the sewing machine stand should be well oiled and kept free from dust by an occasional thorough cleaning. A treadle that does not work freely usually needs oiling.

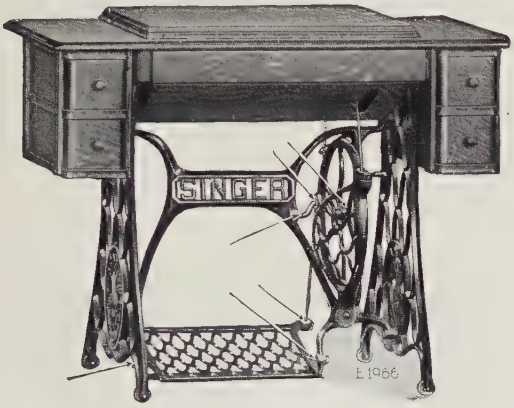



Fig. 31. Oiling Points on Stand

Observe the oiling points on the Singer stand as shown in Fig. 31. One drop of oil is sufficient at each oiling point. By taking this precaution there is no danger of soiling the floor or the clothing of the operator directly after oiling.

## Removing Gummed Oil

If the machine has been idle for several weeks and runs hard, it is probably due to gummed oil. When a machine has become gummed, all working parts should be carefully oiled with kerosene or gasoline. This will loosen the old oil if not too badly gummed. Run the machine rapidly for a few minutes and wipe thoroughly with a piece of cheese cloth. Then oil all working parts with high-grade sewing machine oil. A second oiling after a few hours of use is advisable whenever kerosene or gasoline has been used. If the machine does not run freely after this treatment, it should be examined by a skilled sewing machine adjuster.

## The Importance of an Oiling Lesson

An oiling lesson would be most valuable for students, as it will enable them to give their machines at home proper care and to keep school machines in perfect running order. All oiling points are outlined in the instruction books for the various models of machines and should be carefully followed until the student has learned every point where oil is required.

## How to Shorten or Replace a Belt

To shorten a belt already on the machine, open the hook at the joint, take off one end of the belt, pull up the slack and make a mark for cutting. After cutting off the surplus length, put the newly cut end back on the hook and before tightening the hook again test the belt for tension to be sure it has been shortened sufficiently.

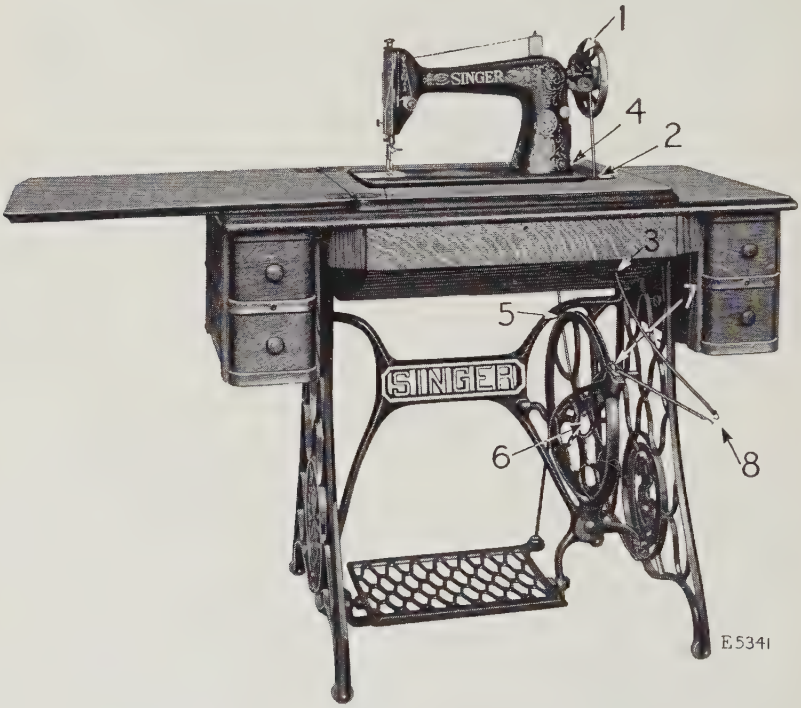



Fig. 32. Steps in Putting on a New Belt

To replace an old belt with a new one, take off the old one and use it to measure the length of the new one or proceed as follows:

First put one end over the balance wheel, making sure that it goes down into the belt groove (1, Fig. 32) and comes out the front under the bobbin winder. Then continue down through the front hole in the lifter plate (2, Fig. 32) and out through the hole (3) in the shield. Pull through about 12 inches of the belt to prevent the end slipping back through hole 3.

Next, working from the back of the machine, put the other end of the belt through the rear hole (4) in the lifter plate, through belt guide (5), between band wheel and brace (6) and through belt shifter (7). Pull the slack from both ends forward to (8) and put the hook in one end of the belt through the hole in the other end, but do not flatten the hook.

Then operate the treadle, which will automatically throw the belt on the band wheel. Now test the belt tension and if not too loose, flatten the hook so it does not project beyond the belt. If it is necessary to shorten the belt to secure proper tension, throw it off the band wheel by using the belt shifter, pull forward to (8), unhook, shorten, rehook and test again.

Fig. 33. Belt Punch

A new belt will stretch and require shortening much sooner than an old one and should therefore be applied a little tighter than usual.

It is quite necessary to have a belt punch to care for belts properly. Such a belt punch as shown in Fig. 33, will cut a belt and punch the hole at one operation. The pliers on the end of the punch will serve to loosen the wire hook and tighten it again. It is also well to have on hand a small quantity of belt hooks for repairing belts.

## COMMON CAUSES OF MACHINE TROUBLES

### Causes of Upper Thread Breaking

Machine improperly threaded (see pages 32, 36, 40, 44).

Tensions too tight (see page 14).

Needle bent or having blunt point.

Thread too coarse for size of needle (see page 12).

Needle too fine for size of thread and material to be sewn (see page 12).

Burr on needle hole in throat plate (caused by breaking needle in pulling material from machine).

Burr on needle hole in presser foot (caused from sewing over pins or breaking needle).

Needle set with flat side to outside of clamp (see page 13).

Needle too long for machine, or not all the way up in clamp.

Take-up spring bent or broken. (Send for adjuster to repair).

Tension discs worn so that thread works in groove.

### Causes of Lower Thread Breaking

Improper threading of bobbin case or shuttle (see pages 32, 36, 40, 44).

Tension too tight (see page 14).

Thread wound unevenly on bobbin or bobbin wound too full (see Fig. 7, page 10).

Spring on bobbin case or shuttle worn to sharp groove.

Burr on under side of throat plate (sometimes caused by sewing over pins or breaking needle).

### To Avoid Breaking Needles

Do not sew heavy seams with a needle too fine.

Use proper size of needle for thread and material to be sewn (see page 12).

See that the presser foot or attachments are securely fastened to the bar and that the needle goes through the center of the hole.

Do not pull the material to one side when taking it from the machine. The needle may become bent and strike the side of the hole when starting to sew (see page 16).

Do not pull material when sewing. The needle may become bent and strike the back of the needle hole.

Do not bend the needle when pulling out the material before cutting thread (see page 16).

Do not use a needle that is too long. It is liable to come in contact with the bobbin case and break, probably spoiling the case and requiring replacement. (Use only genuine Singer needles in Singer machines. See page 12).

Do not leave pins in the material after basting and sew over them with the machine.

### Skipping Stitches

Needle not accurately set into the needle bar, blunt or bent.

Needle too small for the thread used.

Needle too short for the machine.

### Stitches Looping

Looped stitches are usually caused by an improper tension. If the loop is on the **upper** side, it may be corrected by tightening the **under** tension. If the loop occurs on the **under** side, it may usually be corrected by tightening the **upper** tension (see page 14).

See that both the upper and lower threading is correct, that the thread is of good quality and the correct size for the needle.

Test both tensions and stitch on the same material to be sewn.

Looping of stitches is sometimes caused by the placing of the bobbin in the bobbin case or shuttle so that the thread pulls from the wrong side of the bobbin, or by the bobbin being wound too full. See pages 32, 36, 40, 44).

### Machine Not Feeding Properly

Improper feeding is often due to the pressure being too light for the material to be sewn (see page 18).

The feed dog may be worn smooth. This may be determined by running the finger over the teeth. If they are not sharp, the feed dog should be replaced by a competent adjuster.

The stitch regulator may have been turned back so far that the feed is entirely out of action.

Needle may be bent.

### Machine Working Heavily

If the machine works hard after standing it is probably gummed and needs a general cleaning (see page 19).

The belt may be too tight and hence putting excessive pressure on the bearings.

When the belt is too loose it slips on the balance wheel and causes the operator to treadle more than is necessary.

Sometimes thread becomes wound around the hub of the balance wheel and the ends of the band wheel crank. With constant running and contact with oil the thread works in next to the bearings so tightly that it makes the machine run heavily. When this happens, remove the thread with a stiletto or other sharp instrument.

### Puckered Seams

Tension too tight.

Stitch too long for material being sewn, especially on fine material.

Wrong presser foot used. The foot on the 66 Machine is longer than on other models and if a shorter foot from some other machine is used, puckering may result when using a long stitch (see page 26).

### Noisy Treadle

If the treadle is noisy, the screws on which it is pivoted need tightening. Release one of the screws by backing off the nut one or two turns with a wrench, place a screw driver in the slot of the screw and advance the screw toward the treadle just enough to take up the slack. Tighten the nut and test the treadle. If still noisy, repeat the operation on the other side.

## Presser Feet for 66 Class Machines

Singer Machine No. 66-4, which has now replaced the previous model 66-1, has a square seat on the presser bar and the presser foot is attached in a different manner. (See Figs. 34 and 35.)

FIG. 34. FOOT ON 66-1 MACHINE

FIG. 35. FOOT ON 66-4 MACHINE

This change also affects the attachments which fasten to the presser bar in place of the presser foot. The new presser foot and attachments are interchangeable with those on Singer machines of Classes 15, 115 and 127, but should not be confused with those for the 66-1 machine.

## Removing and Replacing the Slide Plate on the 66 Machine

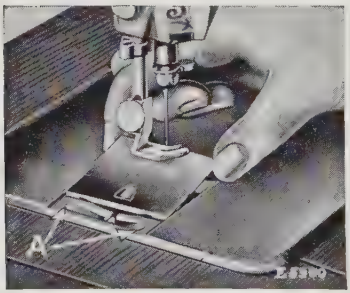



FIG. 36. REMOVING THE SLIDE ON THE 66 MACHINE

To remove the bed slide on the 66 machine, lift up the right side and grasp with the thumb and forefinger, as shown in Fig. 36, and pull to the right. To replace the slide, grasp it in the same manner and push to the left, being sure that the ends of the spring (A, Fig. 36) enter the grooves on the under side of the slide.

CHAPTER 2

# STITCH FORMATION BY THE VARIOUS TYPES OF SINGER FAMILY SEWING MACHINES

## The Principal Parts of Lock-Stitch Sewing Machines and Their Uses

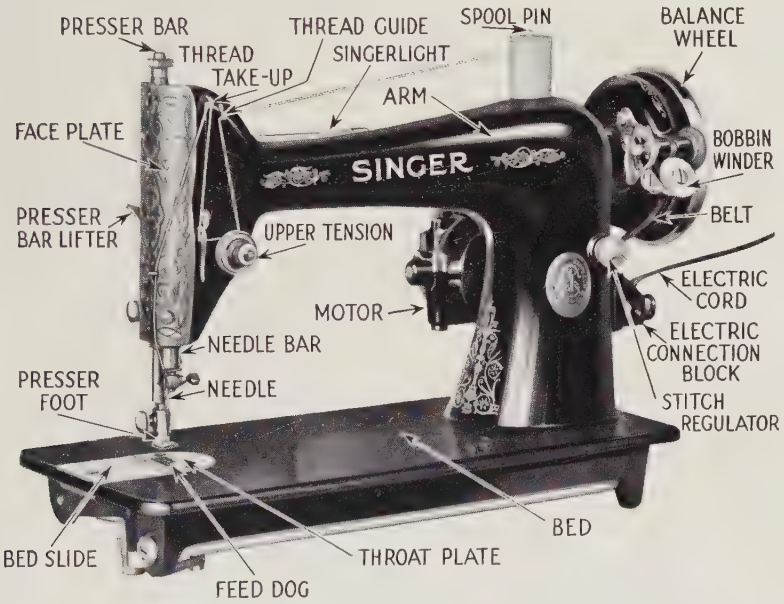



FIG. 37. PRINCIPAL PARTS OF THE HEAD

**Spool Pin**—spindle on which spool rests.

**Head**—The part above the table (Fig. 37) containing the stitching mechanism.

**Arm**—the curved part of the head containing the mechanism for driving the needle and handling the upper thread.

**Bed**—the flat portion of the head, under which is mounted the mechanism for driving the shuttle and handling the lower thread.

**Balance Wheel**—the wheel at the right of the head driven by the **belt.**

**Bobbin Winder**—the mechanism for automatically winding bobbins.

**Stitch Regulator**—the parts which control the sweep of the feed dog, thereby regulating the length of the stitch.

**Upper Tension**—the means for controlling the delivery of the upper thread from the spool.

**Thread Take-up**—the mechanism which pulls up the slack in the thread and locks the stitch.

**Thread Guide**—supports the thread in its passage from the spool to the tension disc.

**Needle Bar**—the vertical bar to which the **needle** is attached and which carries the upper thread down through the fabric at each stitch.

**Presser Bar**—the vertical bar to which the **presser foot** is attached. This bar is surrounded by a spring which holds the fabric down against the feed dog when sewing but may be released by raising the **presser bar lifter.**

**Face Plate**—the vertical plate on the left of the arm which may be removed to give access to the needle bar, presser bar and take-up.

**Throat Plate**—the plate in the bed directly under the needle through which the needle passes and through which the feed dog projects upward.

**Feed Dog**—the toothed part which projects upward through slots in the throat plate, carrying the fabric from the operator at each stitch. The movement of the feed dog is controlled by the stitch regulator to give the desired length of stitch.

**Bed Slide**—the flat plate or plates at the left of the bed which may be opened to give access to the shuttle or bobbin case and other parts of the lower stitch forming mechanism.

For the following parts, which vary in form and arrangement with the various types of machines, see the pages 31 to 51 in this chapter:

**Bobbin**—the metal spool on which thread is wound to furnish the lower or shuttle thread supply.

**Shuttle or Bobbin Case**—the container in which the bobbin is placed and around which the loop of the needle thread is passed in forming the lock stitch.

**Rotary or Oscillating Hook**—the part which enters a loop of needle thread and carries it around the bobbin case. In the long-bobbin machine (Singer No. 127) this function is performed by the shuttle, which also acts as a bobbin case.

**Lower Tension**—the spring on the shuttle or bobbin case which controls the delivery of thread from the bobbin.

The following parts of the Cabinet Table are shown in Fig. 38:

**Cabinet Work**—all the wood parts of the table, such as drawers, table top, extension leaf and the shield into which the head is lowered.

**Stand**—all the metal parts of the table on which the cabinet work is mounted.

**Treadle**—the pivoted platform on which the feet rest and to which a rocking motion is imported when operating the machine.

**Pitman**—the rod connecting the treadle and the band wheel crank.

**Band Wheel**—the large wheel with a groove in which the belt runs, mounted on the **band wheel crank** and rotated by the up and down motion of the pitman.

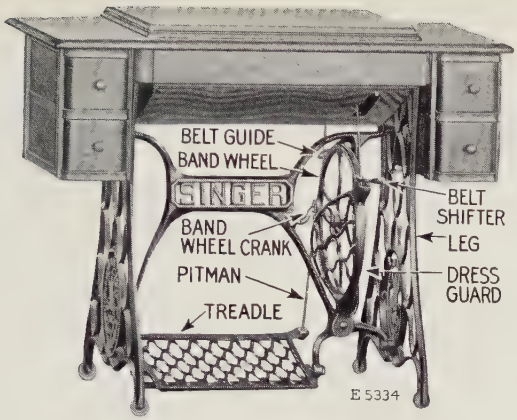



Fig. 38. Principal Parts of the Cabinet Table

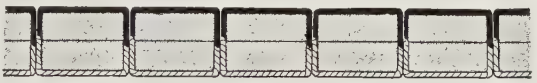
**Belt Shifter**—the lever at the front of the band wheel which may be turned to the left to throw the belt off the band wheel. The belt may be replaced automatically by treadling, this action being accomplished by a projection on the side of the band wheel assisted by the **belt guide** in the rear.

**Legs**—the upright members which support the table.

**Dress Guard**—the shield in front of the band wheel to keep the operator's clothing from being caught in the wheel.

## Formation of the Lock Stitch

The lock stitch made by sewing machines consists of an upper or needle thread and an under or bobbin thread locked together in the material which is being stitched, the lock being formed by passing the upper around the lower thread and tightening them together in the middle of the fabric.



When a stitch has been completed and before each succeeding stitch is commenced, the fabric being stitched is carried from the needle by the feeding mechanism and upon the length of its movement depends the length of the stitch.

The presser foot holds down the fabric, prevents it from rising with the needle and holds it in contact with the feed dog while the feeding takes place. A section of the foot pressing on the cloth is shown as broken in the following illustrations, in order that the view of the stitching may not be obstructed.

On following pages are illustrations showing the method of forming a lock stitch. In the illustrations the needle thread is shown black and the under thread white, the fabric being stippled, in order that each may be readily distinguished.

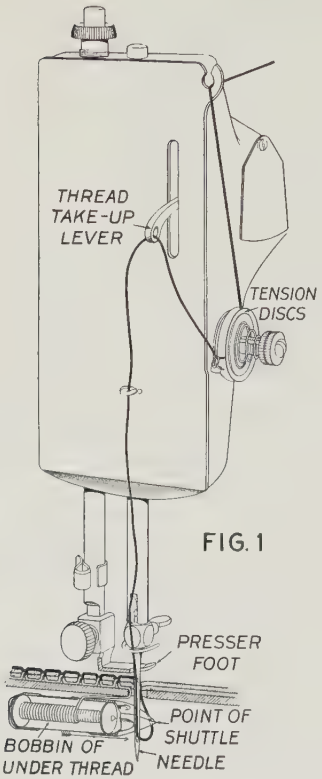



FIG. 1

## Point of Shuttle Entering Loop of Needle Thread

Fig. 1 shows the first stage in stitch formation. The thread leading to the needle is loosened, because the thread take-up lever has begun its descent, the needle, after having descended to its lowest point, has been slightly raised and a loop of thread is thus formed which is immediately entered by the point of the shuttle.

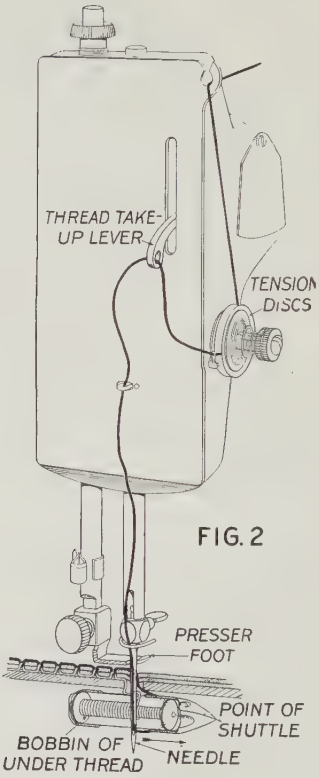



FIG. 2

## Shuttle in Loop of Needle Thread

Fig. 2 shows the second stage. The shuttle containing the bobbin of under thread has fully entered the loop of needle thread, sufficient enlargement of the loop having been permitted by the descent of the thread take-up lever.

The shuttle travels to and fro in a carrier to which it is not fastened, but by which it is held in position. During the forward movement of the shuttle the loop of needle thread slips between the shuttle and the carrier, then passes out between the heel of the shuttle and the rear part of the carrier. The shuttle thread is thus enclosed in the loop of needle thread and both threads are then drawn up by the action of the thread take-up lever.

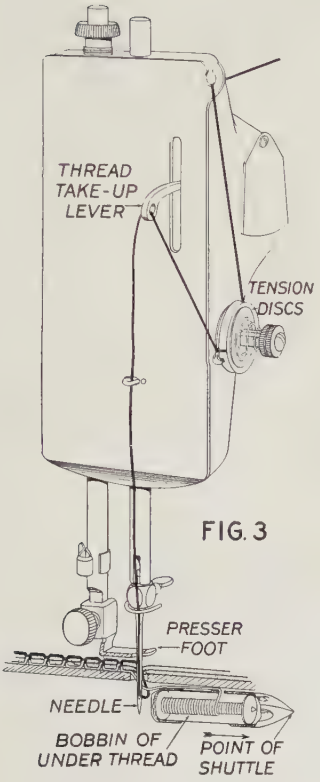



FIG. 3

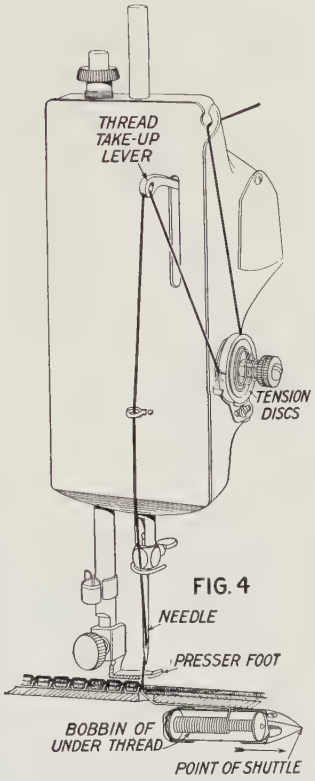



FIG. 4

## Shuttle Thread Enclosed by Needle Thread

Fig. 3 shows the third stage. The shuttle has passed through the loop of needle thread, the shuttle thread has been enclosed by the needle thread, and the thread take-up lever is being raised to tighten the stitch.

## Stitch Completed

Fig. 4 shows the stitch completed. The thread take-up lever has been raised to its highest point, drawing the needle thread, together with the shuttle thread, into the middle of the fabric, the two threads now being locked. The tension on the needle thread is regulated by the circular tension discs shown in the illustrations, and the tension on the under thread is regulated by a spring on the shuttle.

## Vibrating or Long Shuttle (Machine No. 127)

### Upper Threading

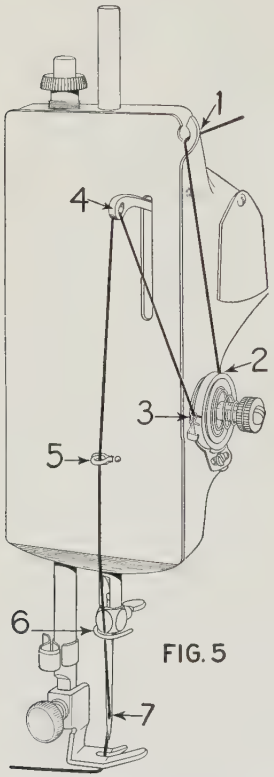


FIG. 5

Turn the balance wheel over toward you until the thread take-up lever (4, Fig. 5) is raised to its highest point. Place the spool of thread on the spool pin at the top of the machine, lead the thread into the thread guide (1) at the top of the face plate, down, under and from right to left between the tension discs (2), into the small wire spring (3) at the left of the tension discs, up and from front to back through the hole in the end of the thread take-up lever (4), down into the eyelet (5) in front of the face plate, into the lower wire guide (6), then from left to right through the eye of the needle (7).

Draw about two inches of thread through the eye of the needle with which to commence sewing.

### Under Threading

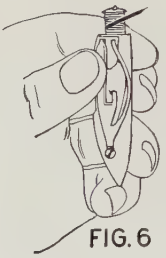


FIG. 6

Hold the shuttle between the thumb and fingers of the left hand as shown in Fig. 6. Place the bobbin into the shuttle with the thread drawing toward the right from the side of the bobbin nearest you, as shown in Fig. 6.

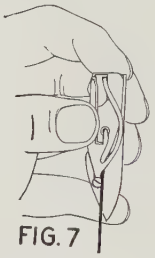


FIG. 7

Place the forefinger of the left hand on the end of the bobbin and draw the thread downward into the long slot in the shuttle as far as it will go, as shown in Fig. 7.

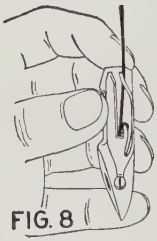


FIG. 8

Then draw the thread **straight upward** and under the tension spring as shown in Fig. 8, until the bobbin begins to unwind.

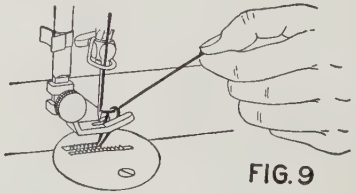


FIG. 9

### Drawing up the Under Thread

With the left hand hold the end of the needle thread, leaving it slack from the hand to the needle, turn the balance wheel over towards you until the needle moves down and up again to its highest point, thus catching the under thread, draw up the needle thread and the under thread will come up with it through the hole in the throat plate (see Fig. 9). Lay both threads back under the presser foot.

## Vibrating or Long Shuttle (Machine No. 127)

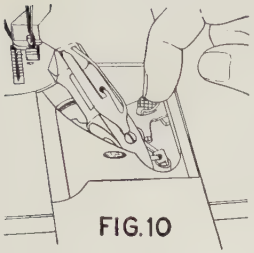


FIG. 10

### To Remove the Shuttle

Draw toward you the front slide in the bed of the machine and turn the balance wheel over toward you until the shuttle comes full under the opening. Press the forefinger of the right hand upon the shuttle ejector as shown in Fig. 10, thus raising the shuttle so that it can easily be taken out. Turn the open end of the shuttle downward and the bobbin will drop out.

### To Replace the Shuttle

After threading take the shuttle in the right hand with the point toward you and the tension adjusting screw (1, Fig. 13) upwards. Put the point of the shuttle into the front end of the shuttle carrier as shown in Fig. 11, and drop the shuttle into place, leaving a loose end of thread about three inches long above the slide. When closing the slide leave just enough space for the thread to pass through.

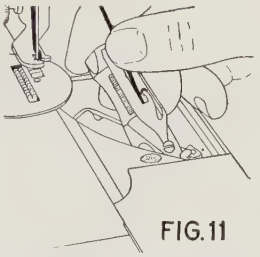
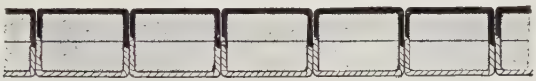


FIG. 11

### To Regulate Tensions



For ordinary stitching the upper and under threads should be locked in the center of the material as shown in the above illustration

If the tension on the upper thread is too tight, or if that on the under thread is too loose, the thread will lie straight along the *upper surface* of the material.

If the tension on the under thread is too tight, or if that on the upper thread is too loose, the thread will lie straight along the *under side* of the material.

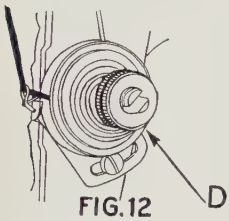


FIG. 12

To tighten the tension on the upper thread, turn the thumb nut (D, Fig. 12) in front of the tension discs, over to the right. To loosen the tension, turn the nut over to the left.

*The tension on the needle thread should only be regulated when the presser foot is down.*

The tension on the bobbin thread is regulated by the small screw (I, Fig. 13) near the point of the shuttle. To increase the tension, turn the screw over to the right. To decrease the tension, turn the screw over to the left.

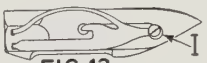


FIG. 13

When the tension on the bobbin thread has once been adjusted properly it is seldom necessary to change it, as a correct stitch can usually be obtained by varying the tension on the needle thread.

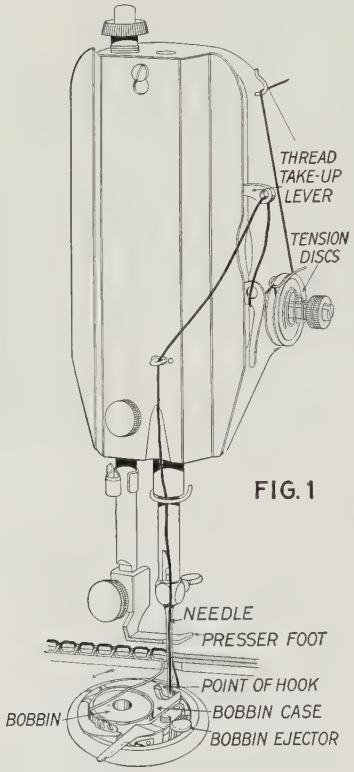



FIG. 1

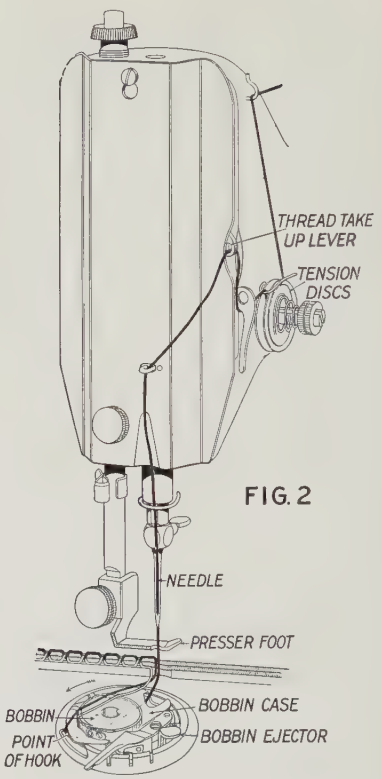



FIG. 2

## Point of Hook Entering Loop of Needle Thread

Fig. 1 shows the first stage in stitch formation. The thread leading to the needle is loosened, because the thread take-up lever has begun its descent; the needle, after having descended to its lowest point, has been slightly raised and a loop of thread is thus formed which is immediately entered by the point of the hook.

This type of hook makes part of a revolution during the beginning of each stitch, the direction being indicated by the arrows in Figs. 1 and 2, and during the completion of the stitch the direction of the hook is reversed as shown by the arrows in Figs. 3 and 4.

The hook oscillates around the bobbin case, which is held stationary.

## Loop of Needle Thread Enclosing Bobbin Case

Fig. 2 shows the second stage. The loop of the needle thread has been taken by the point of the hook and is being passed around the bobbin case containing the bobbin of under thread, sufficient enlargement of the loop having been permitted by the descent of the thread take-up lever.

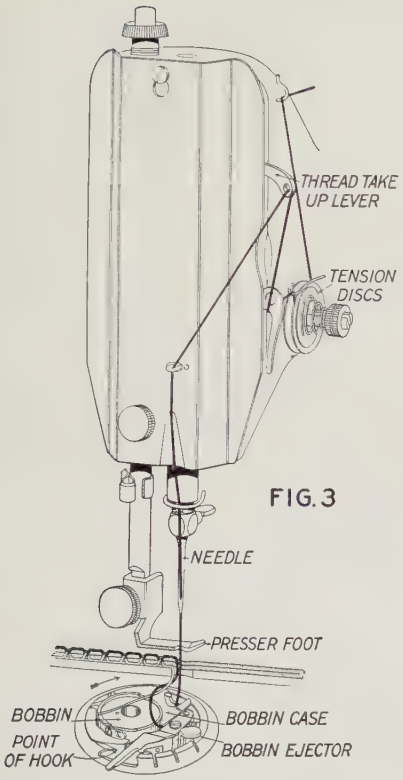



FIG. 3

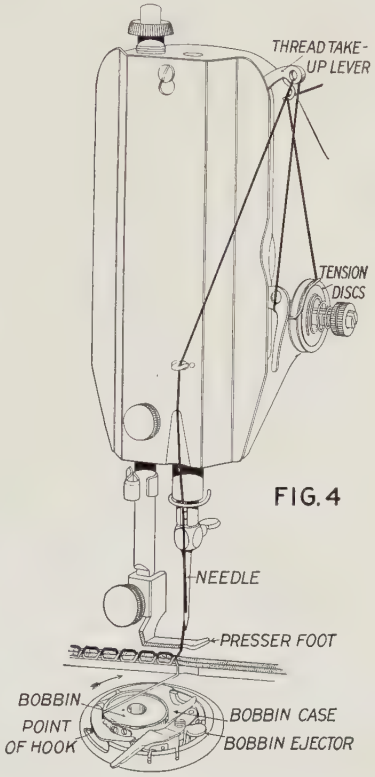



FIG. 4

## Under Thread Enclosed by Needle Thread

Fig. 3 shows the third stage. The under thread has been enclosed by the needle thread and the thread take-up lever is being raised to tighten the stitch.

## Stitch Completed

Fig. 4 shows the stitch completed. The thread take-up lever has been raised to its highest point, drawing the needle thread, together with the under thread, into the middle of the fabric, the two threads now being locked. The tension on the needle thread is regulated by the circular tension discs shown in the illustrations, and the tension on the under thread is regulated by a spring on the bobbin case.

## Oscillating Hook (Machine No. 66)

### Upper Threading

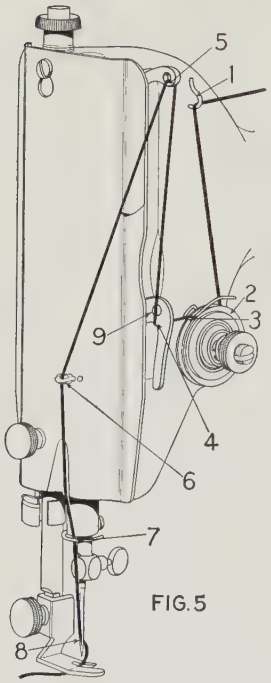


FIG. 5

Raise the thread take-up lever (5) to its highest point by turning the balance wheel over toward you. Place the spool of thread on the spool pin; lead the thread into the thread guide (1) at the left and near the top of the arm, down, under and from right to left between the tension discs (2), into the small wire spring (3) at the left of the discs, *under the thread regulator* (4) *at the left* (not through the eye of the thread regulator (9) which is used only for darning and embroidery), up and from right to left through the eyelet (5) in the end of the thread take-up lever, down into the eyelet in front of the face plate (6), into the lower wire guide (7), then from *left to right* through the eye of the needle (8). Draw about two inches of thread through the needle with which to commence sewing.

### Under Threading

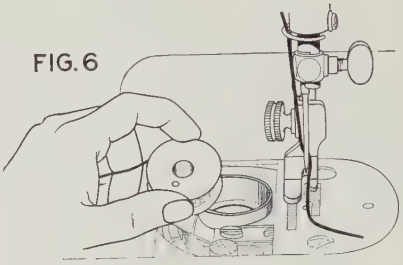


FIG. 6

Hold the bobbin between the thumb and forefinger of the left hand, the thread leading on top from the right toward the left, (see Fig. 6).

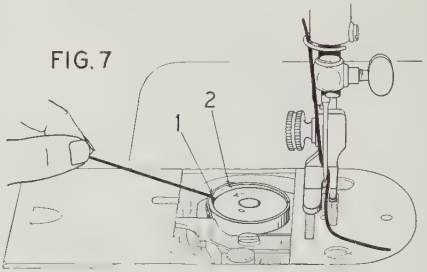


FIG. 7

Place the bobbin into the bobbin case and draw the thread into the slot in the bobbin case at the left, (see 1 in Fig. 7).

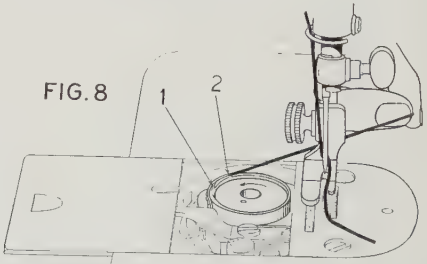
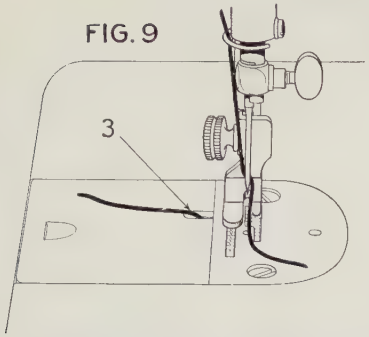
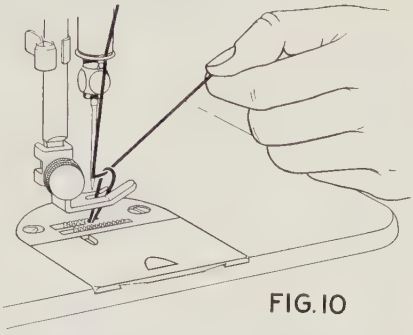


FIG. 8

Draw the thread backward between the bobbin case and the tension spring until it reaches the notch (see 2 in Fig. 8), then pull the thread with the left hand toward the right as illustrated, and close the slide.

## Oscillating Hook (Machine No. 66)




When closing the slide see that the thread is in the slot in the right edge of the slide, as shown in Fig. 9. This completes the under threading.

With the left hand hold the end of thread, leaving it slack from the hand to the needle, turn the balance wheel over toward you until the needle moves down and up again to its highest point, thus catching the under thread; draw up the needle thread and the under thread will come up with it through the hole in the throat plate (see Fig. 10). Lay both threads back under the presser foot.

The machine is then ready for stitching.

## To Regulate Tensions

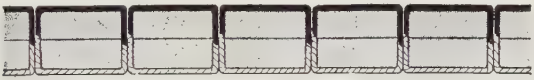


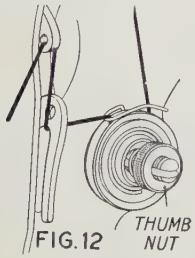
Fig. 11

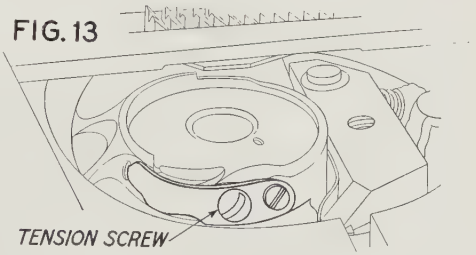
For ordinary stitching the upper and under threads should be locked in the center of the material as shown in the above illustration, Fig 11

If the tension on the upper thread is too tight, or if that on the under thread is too loose, the thread will lie straight along the *upper surface* of the material.

If the tension on the under thread is too tight, or if that on the upper thread is too loose, the thread will lie straight along the *under side* of the material.

To tighten the upper tension, turn the thumb nut over to the right. Turn the nut over to the left to loosen it, (see Fig. 12).




The tension on the under thread is regulated by the large screw which is nearest the back in the bobbin case tension spring, (see Fig. 13); turn over to the right to tighten the tension or to the left to loosen it.

When the lower tension has once been adjusted properly it is seldom necessary to change it, as a correct stitch can usually be obtained by varying the upper tension.

## Oscillating Shuttle (Machine No. 15)

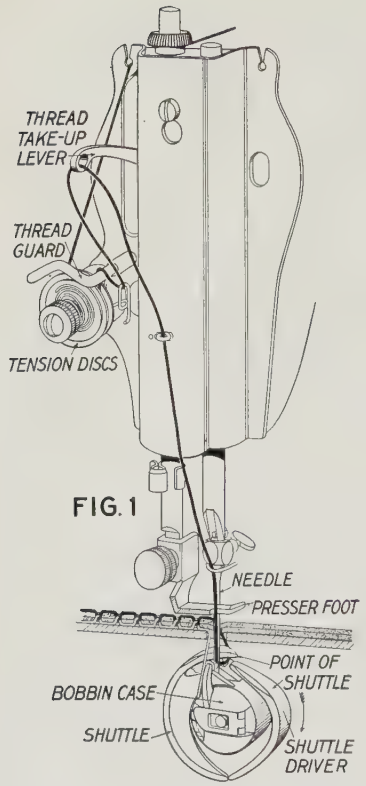



FIG. 1

### Point of Shuttle Entering Loop of Needle Thread

Fig. 1 shows the first stage in stitch formation. The thread leading to the needle is loosened, because the thread take-up lever has begun its descent; the needle, after having descended to its lowest point, has been slightly raised and a loop of thread is thus formed which is immediately entered by the point of the shuttle. The oscillating shuttle makes part of a revolution during the beginning of each stitch, the direction being indicated by the arrows in Figs. 1 and 2, and during the completion of the stitch the direction of the shuttle is reversed as shown by the arrows in Figs. 3 and 4.

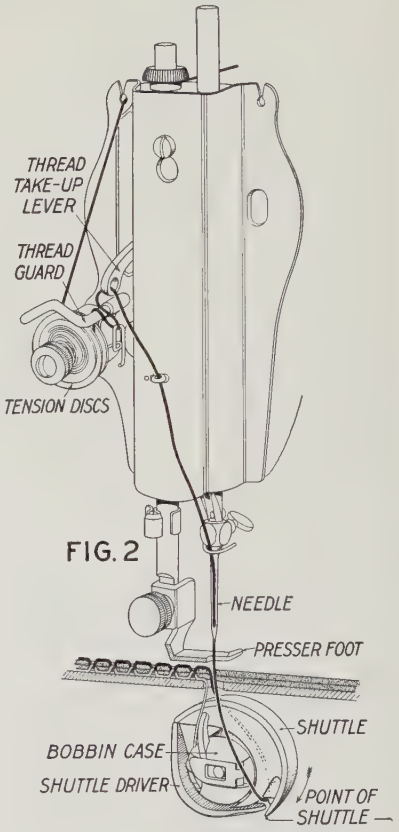



FIG. 2

### Loop of Needle Thread Enclosing Bobbin Case

Fig. 2 shows the second stage. The loop of needle thread has been taken down by the point of the shuttle and is being passed around the bobbin case containing the bobbin of under thread, sufficient enlargement of the loop having been permitted by the descent of the thread take-up lever.

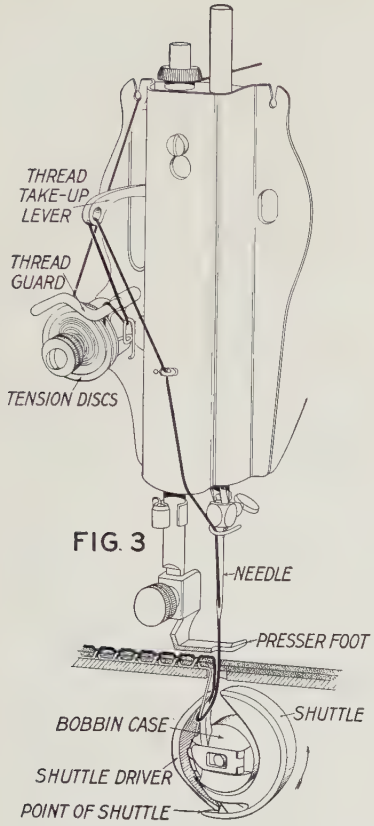



FIG. 3

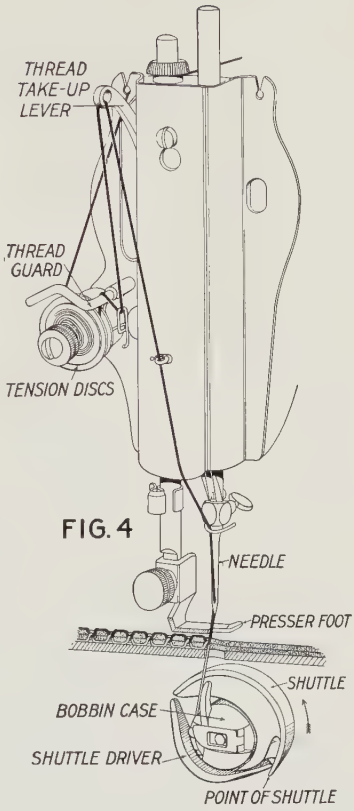



FIG. 4

## Under Thread Enclosed by Needle Thread

Fig. 3 shows the third stage. The loop of the needle thread has been cast off from the shuttle, the under thread has been enclosed by the needle thread and the thread take-up lever is being raised to tighten the stitch.

## Stitch Completed

Fig. 4 shows the stitch completed. The thread take-up lever has been raised to its highest point, drawing the needle thread, together with the under thread, into the middle of the fabric, the two threads now being locked. The tension on the needle thread is regulated by the circular tension discs shown in the illustrations, and the tension on the under thread is regulated by a spring on the bobbin case.

## Oscillating Shuttle (Machine No. 15)

### Upper Threading

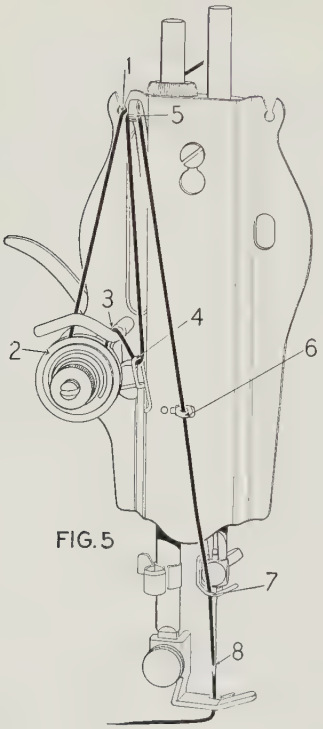


FIG. 5

Raise the take-up lever (5) to its highest point by turning the balance wheel over toward you. Place the spool of thread on the spool pin; draw the thread toward the left through the thread guide (1) at the back and at the top of the face plate, down, under and around from back to front between the tension discs (2), up back of the tension thread guard (3), down into the loop of the take-up spring (4), up and from back to front through the eyelet in the end of the take-up lever (5), down through the eyelet (6) in front of the face plate and into the wire thread guide (7) at the lower end of the needle bar, then from left to right through the eye of the needle (8). Draw about two inches of thread through the eye of the needle with which to commence sewing.

### Under Threading

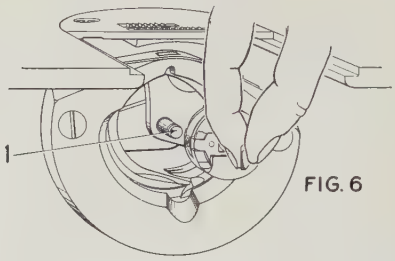


FIG. 6

Draw out the slide in the bed of the machine. Reach down with the thumb and forefinger of the left hand, open the bobbin case latch with the forefinger and lift out the bobbin case as shown in Fig. 6.

While the latch remains open the bobbin is retained in the bobbin case. Release the latch, turn the bobbin case downward and the bobbin will drop out.

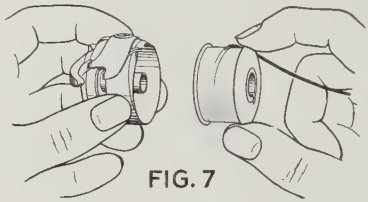


FIG. 7

After winding the bobbin, hold it between the thumb and forefinger of the right hand, the thread leading on top from the left toward the right. With the left hand hold the bobbin case as illustrated (Fig. 7), the slot in the edge being at the top, and place the bobbin into it.

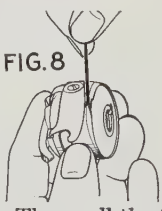


FIG. 8

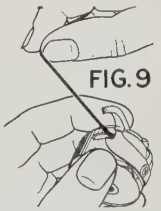


FIG. 9

Then pull the thread into the slot in edge of bobbin case, (Fig. 8). Draw the thread down, under the tension spring, and to the left into the delivery eye at the end of the tension spring (see Fig. 9).

## Oscillating Shuttle (Machine No. 15)

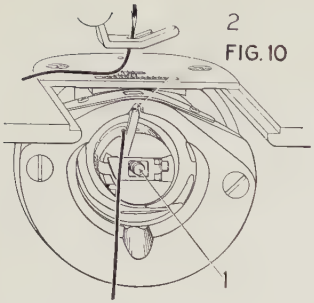


FIG. 10

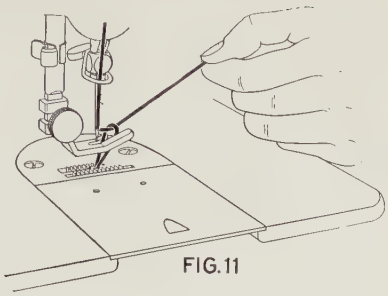


FIG. 11

### To Replace the Bobbin Case

After threading, take the bobbin case by the hinged latch, holding it between the thumb and forefinger of the left hand, place the bobbin case on the center stud of the shuttle body, (see 1 in Fig. 6 and Fig. 10), with the position finger (see 2 in Fig. 10) in the notch at the top of the shuttle race, release the latch and press the bobbin case back until the latch catches the groove near the end of the stud. Allow the thread to hang free and replace the slide in the bed of the machine.

### Drawing Up the Under Thread

With the left hand hold the end of the needle thread, leaving it slack from the hand to the needle, turn the balance wheel over towards you until the needle moves down and up again to its highest point, thus catching the under thread; draw up the needle thread and the under thread will come up with it through the hole in the throat plate, (see Fig. 11). Lay both threads back under the presser foot.

### To Regulate Tensions

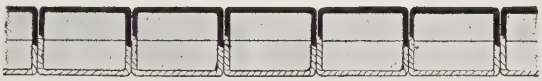


Fig. 12

For ordinary stitching the upper and under threads should be locked in the center of the material as shown in the above illustration, Fig. 12

If the tension on the upper thread is too tight, or if that on the under thread is too loose, the thread will lie straight along the *upper surface* of the material.

If the tension on the under thread is too tight, or if that on the upper thread is too loose, the thread will lie straight along the *under side* of the material.

To tighten the tension on the upper thread, turn the thumb nut, (see Fig. 13) in front of the tension discs, over to the right. To loosen the tension, turn the nut over to the left.

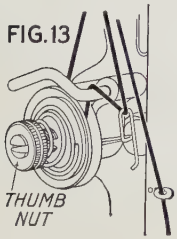


FIG. 13

The tension on the under thread is regulated by the screw in the bobbin case tension spring, (see Fig. 14). To tighten the tension, turn the screw over to the right. To loosen the tension, turn the screw over to the left. When the lower tension has once been adjusted properly it is seldom necessary to change it; a correct stitch can usually be obtained by tightening or loosening the upper tension.

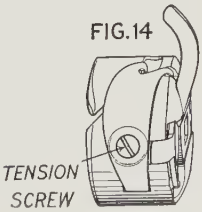


FIG. 14

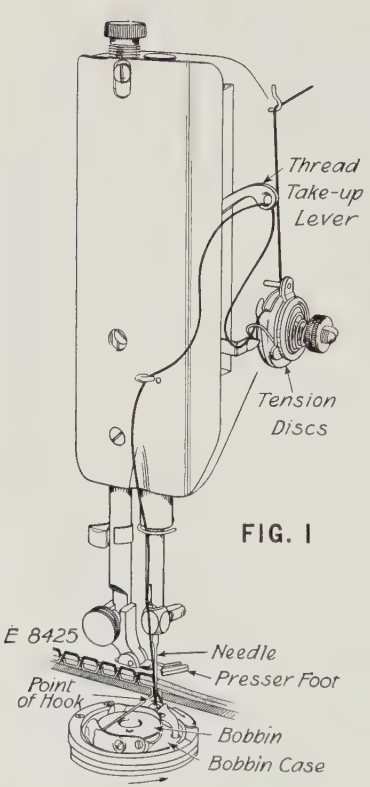



FIG. 1

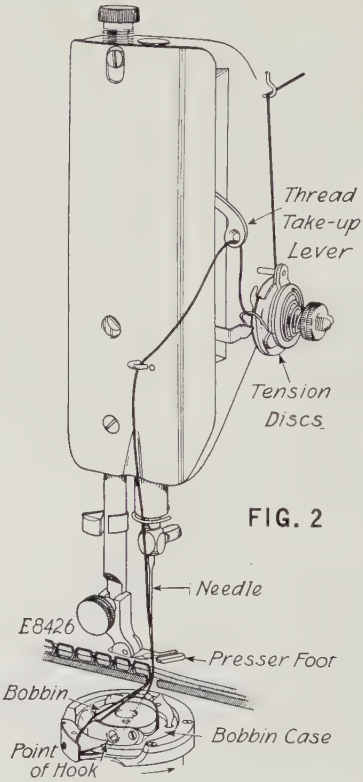



FIG. 2

## Point of Hook Entering Loop of Needle Thread

Fig. 1 shows the first stage in stitch formation. The thread leading to the needle is loosened, because the thread take-up lever has begun its descent; the needle, after having descended to its lowest point, has been slightly raised and a loop of thread is thus formed which is immediately entered by the point of the hook.

## Loop of Needle Thread Enclosing Bobbin Case

Fig. 2 shows the second stage. The loop of the needle thread has been taken by the point of the hook and is being passed around the bobbin case containing the bobbin of under thread sufficient enlargement of the loop having been permitted by the descent of the thread take-up lever.

This type of hook makes two complete revolutions for each stitch, the direction of rotation being indicated by the arrows in Figs. 1 and 2. During its first revolution, the hook carries the needle thread around the stationary bobbin case, and while the "cast off" needle thread is being drawn up by the thread take-up lever, the hook makes a second revolution without carrying the needle thread.

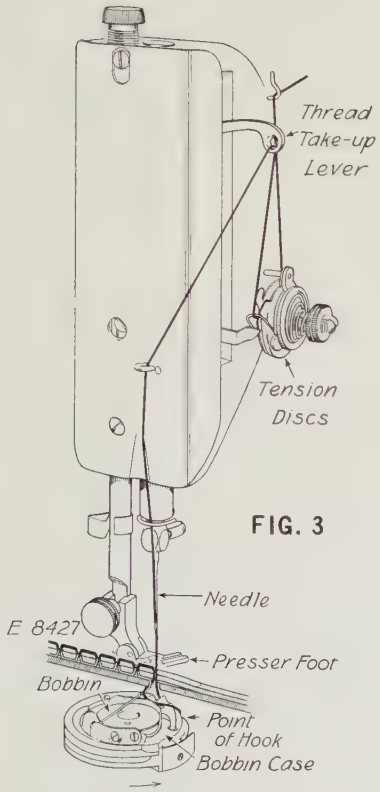



FIG. 3

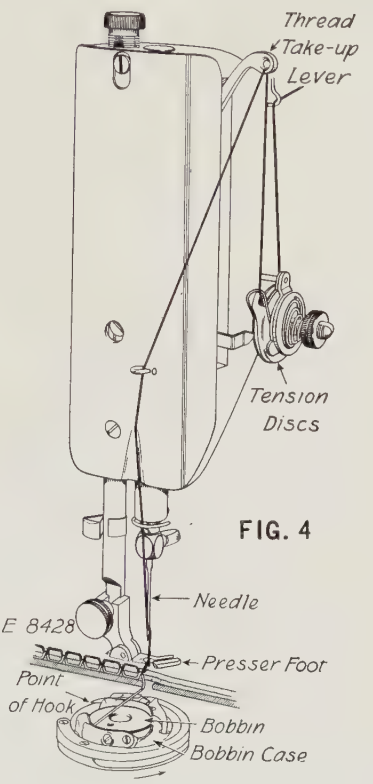



FIG. 4

## Under Thread Enclosed by Needle Thread

Fig. 3 shows the third stage. The under thread has been enclosed by the needle thread, and the thread take-up lever is being raised to tighten the stitch.

## Stitch Completed

Fig. 4 shows the stitch completed. The thread take-up lever has been raised to its highest point, drawing the needle thread, together with the under thread, into the middle of the fabric, the two threads now being locked. The tension on the needle thread is regulated by the circular tension discs shown in the illustrations, and the tension on the under thread is regulated by a spring on the bobbin case.

## Upper Threading

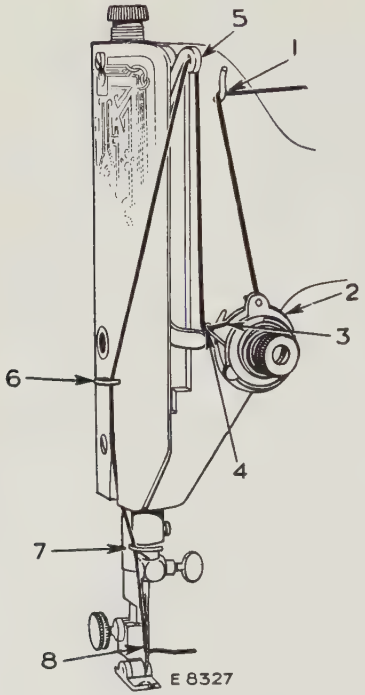



FIG. 5

Turn the balance wheel over toward you until the thread take-up lever (5) is raised to its highest point. Place the spool of thread on the spool pin at the top of the machine; pass the thread into the thread guide (1) at the left, down, under and from right to left between the tension discs (2). Hold the spool tightly in the right hand and with the left hand pull the thread up under the thread take-up spring (4) until it enters the retaining fork (3), then pass the thread up and from right to left through the hole (5) in the end of the thread take-up lever, down into the eyelet (6) at the front of the face plate, into the lower wire thread guide (7), then from left to right through the eye of the needle (8). Draw about two inches of thread through the eye of the needle with which to commence sewing.

## Under Threading

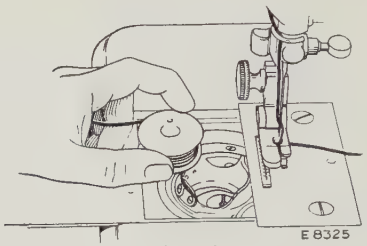



FIG. 6

Hold the bobbin between the thumb and forefinger of the left hand, the thread leading on top from the right toward the left. (See Fig. 6.)

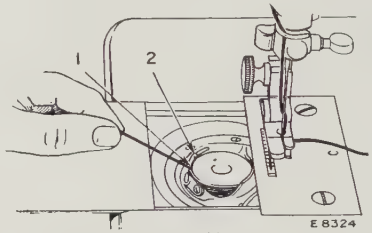



FIG. 7

Place the bobbin into the bobbin case and draw the thread into the slot in the bobbin case at the left, (see 1 in Fig. 7).

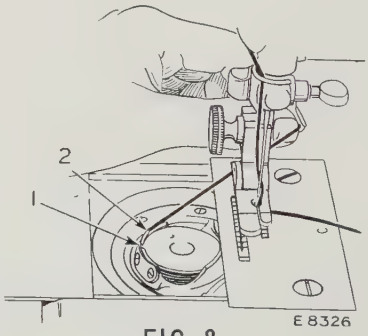



FIG. 8

Draw the thread backward between the bobbin case and the tension spring until it reaches the notch (See 2 in Fig. 8), then pull the thread toward the right, as shown.

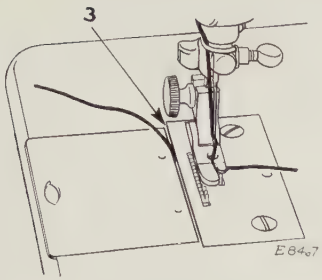



FIG. 9

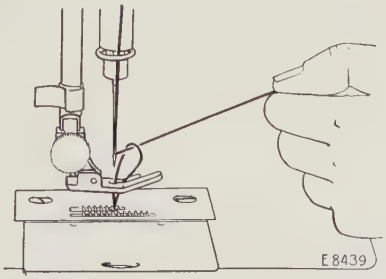



FIG. 10

## Closing the Slide

When closing the slide, leave just enough space for the thread to pass through, as shown at 3 in Fig. 9, above.

## Drawing Up the Under Thread

With the left hand hold the end of the needle thread, leaving it slack from the hand to the needle, turn the balance wheel toward you until the needle moves down and up again to its highest point, thus catching the under thread; draw up the needle thread and the under thread will come up with it through the hole in the throat plate, (see Fig. 10). Lay both threads back under the presser foot.

## To Regulate Tensions

FIG. 11

For ordinary stitching the upper and under threads should be locked in the centre of the material as shown in the above illustration, Fig. 11

If the tension on the upper thread is too tight, or if that on the under thread is too loose, the thread will lie along the *upper surface* of the material.

If the tension on the under thread is too tight, or if that on the upper thread is too loose, the thread will lie straight along the *under side* of the material.

To tighten the tension on the upper thread, turn the thumb nut (see Fig. 12) in front of the tension discs, over to the right. To loosen the tension, turn the nut over to the left.

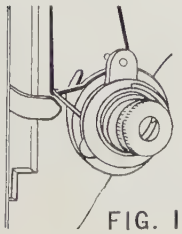


FIG. 12

The tension on the under thread is regulated by the screw in the bobbin case tension spring, (see Fig. 13). To tighten the tension, turn the screw over to the right. To loosen the tension, turn the screw over to the left.

When the lower tension has once been adjusted properly it is seldom necessary to change it, as a correct stitch can usually be obtained by tightening or loosening the upper tension.

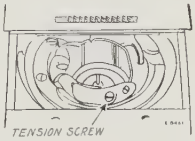



FIG. 13

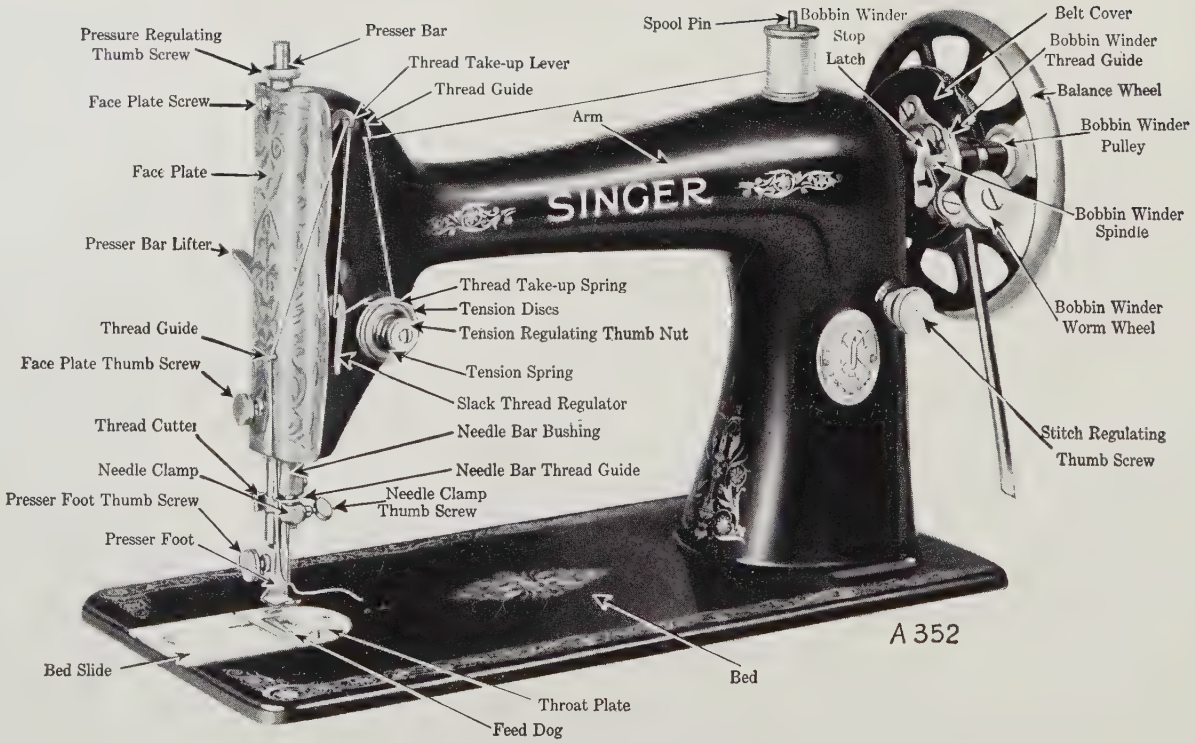



FIG. 39. NAMES OF PARTS OF THE HEAD—SINGER LOCK-STITCH MACHINES

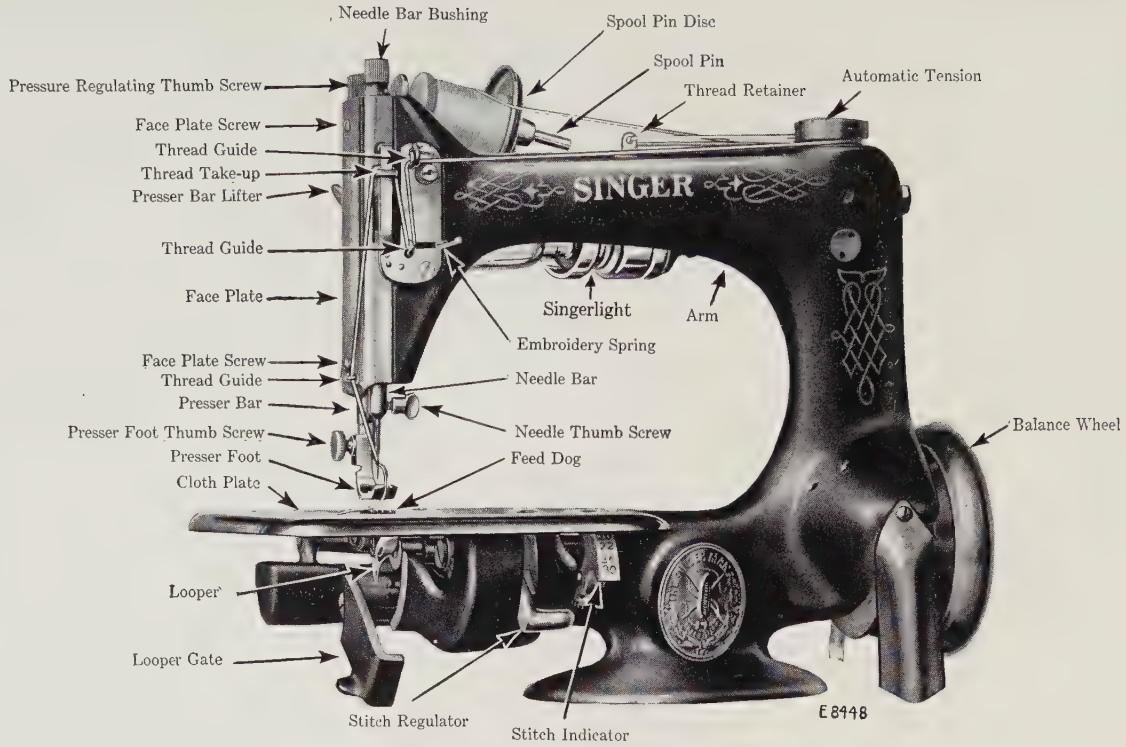



FIG. 40. NAMES OF PARTS OF THE HEAD—SINGER CHAIN-STITCH MACHINE NO. 24

## Single-Thread Elastic Chain Stitch (Machine No. 24)

The stitch made by Singer machines of the 24 Class for family sewing is formed from a single thread which is interwoven into a chain *on the under side of the fabric.* This stitch makes a very elastic seam.

To make this chain, the thread from the needle is formed into a series of interlinking loops by a looper which rotates under the cloth plate. When a new stitch is commenced the one preceding it is being finished.

## The Tension is Automatic

so that no changes are required for variation in length of stitching or in thickness of fabrics.

## This is the Simplest Form of Sewing Mechanism

having no bobbin or shuttle and few working parts. It is sometimes preferred for that reason and also because the seam can be readily taken apart by unfastening the last stitch and drawing out the thread in the opposite direction to that in which the seam was sewn.

When the needle is raised, the fabric which is being stitched is carried from the operator by the feeding mechanism and upon the length of its movement depends the length of stitch.

The last stitch in the seam must be fastened to prevent unravelling. This may be done by either of the following methods:

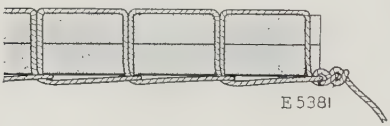



Fig. 1. Fastening Stitch at End of Seam

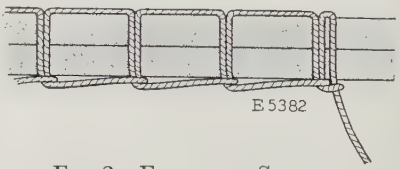
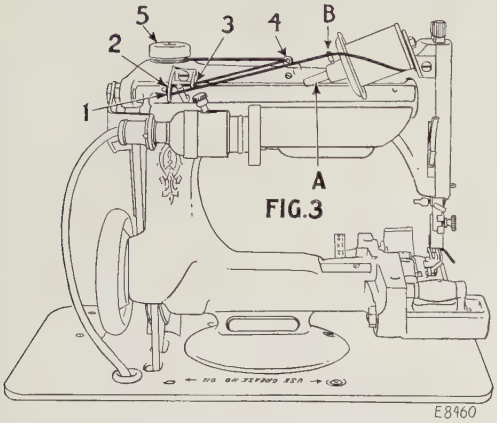



Fig. 2. Fastening Stitch in the Work

When finishing a seam, sew two stitches past the end of the seam, stop the machine with the needle bar and tension discs at their highest point (which is the only position at which the thread is not held by the automatic tension), with the left hand catch the thread in front of the face plate and pull a finger length of slack thread through the tension. With the right hand draw the slack through the eye of the needle, then pull the thread upward from the work and cut the thread close to material. Lift the presser foot, pull the work from you and the end of the thread will be drawn through the loop. Pull the end of the thread, which will tighten the knot and fasten off the seam. (Fig. 1).

When it is necessary to fasten off the last stitch in the work, stop the needle in the work, place the fingers on the work close to the presser foot to prevent the work from moving, raise the presser foot and take one more stitch in the last hole made, then cut off the thread close to the fabric and fasten the same as at the end of the seam. See Fig. 2.

## Single-Thread Elastic Chain Stitch (Machine No. 24)

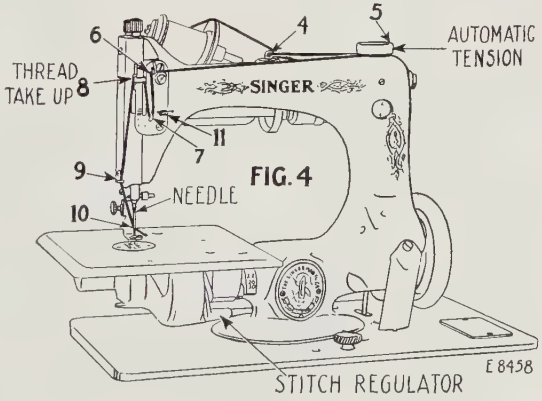



Back of Machine, Cloth Plate Removed

### To Thread the Machine

Turn the balance wheel over from you until the thread take-up (8, Fig. 4) moves up to its highest point, this will raise the tension cap (5, Figs. 3 and 4) for the admission of the thread. Place the spool of thread on the spool pin (A, Fig. 3), and fasten the disc (B, Fig. 3) on the spool pin as shown. Lead the thread from the spool into the eyelet (1, Fig. 3), at the back of the machine, into the eyelet (2, Fig. 3), and through the eyelet (3, Fig. 3). Then pass the thread from back to front into the thread guide (4, Figs. 3 and 4) at the top of the machine, and under from left to right around the tension cap (5, Fig. 4) on the top of the machine, then from right to left through the upper thread guide (6, Fig. 4), down and from right to left through the lower thread guide (7, Fig. 4), then up and over the thread take-up (8, Fig. 4) near the top of the machine, having the thread between the spring and the small post. Pass the thread down into the thread guide (9, Fig. 4), and from left to right through the eye of the needle (10, Fig. 4). Draw about two inches of thread through the eye of the needle with which to commence sewing.

When using coarse silk for embroidery the thread should also be passed into the spring hook made of fine wire (11, Fig. 4). Do not use this spring for any other kind of work.



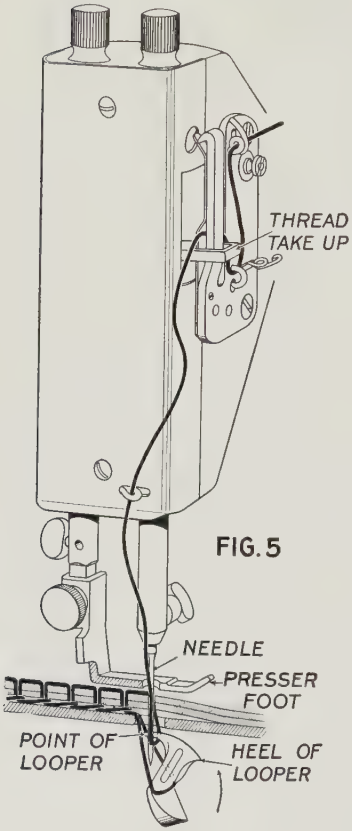



FIG. 5

## Looper Entering Loop of Needle Thread

Fig. 5 shows the beginning of a stitch. The needle after descending to its lowest point has been slightly raised and a loop of thread is thus formed which is immediately entered by the point of the looper and carried by it into the preceding loop.

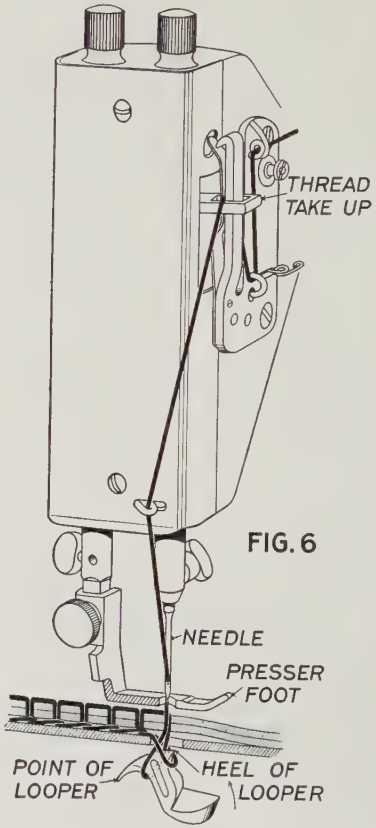



FIG. 6

## Loop Being Carried Through Previous Loop

Fig. 6 shows the loop of thread being carried by the point of the looper down through the preceding loop. The heel of the looper is about to release the preceding loop.

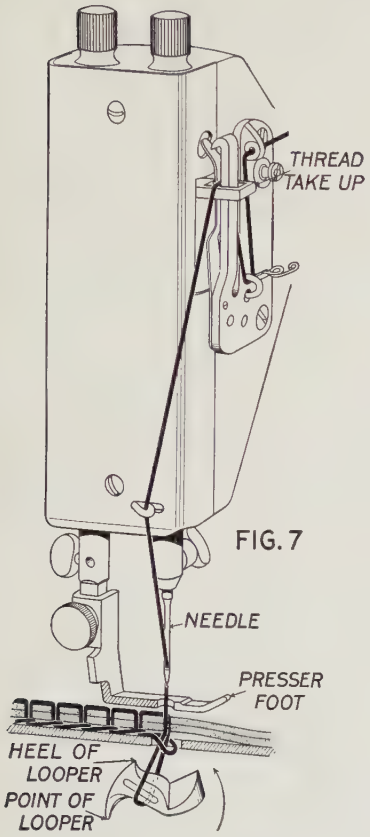



FIG. 7

## Loop Enlarged and Previous Loop Drawn Up

Fig. 7 shows the loop further enlarged by the downward movement of the point of the looper. The preceding loop has been released and is being drawn closer to the fabric by the movement of the looper, assisted by the raising of the thread take-up.

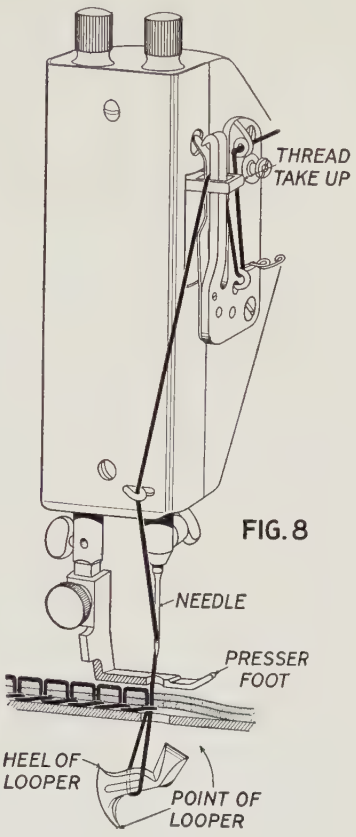



FIG. 8

## Loop Further Enlarged and Previous Loop Completed

Fig. 8 shows the loop of the stitch in process drawn down to its fullest extent by the looper. The preceding stitch has been drawn closely against the under side of the fabric and is completed, the needle and take-up being at the highest point.

To complete the stitch in process, another stitch must be commenced and the operations described in Figs. 5, 6 and 7 repeated.

## Needles and Thread for Chain Stitch Machines

It is very important that the proper needles be used on chain stitch machines and that the proper size of needle and thread for the work to be done are selected. By referring to the following table this may easily be done. Note especially that on the finer goods, such as chiffon and the lightest grades of silk, lawn and batiste, a finer thread and stitch is used than on lock stitch machines.

### RELATIVE SIZES OF NEEDLES, THREAD AND STITCHES

**For Singer Chain Stitch Machine No. 24**

**(Class and Variety of Needles Used, 24 x 1)**

| CLASSES OF WORK | SIZES OF NEEDLES | COTTON | SILK | STITCHES PER INCH |
|---|---|---|---|---|
| Very fine silks, chiffons, lawns, batiste, etc. | 9 | 200 | OOO | 30 |
| | 9 | 150 | OOO | 30 |
| | 9 | 120 | OOO | 30 |
| Fine silk goods, lawns, linens, cambrics, muslins, etc. | 11 | 100 | OOO | 26 |
| | 11 | 90 | OOO | 26 |
| Shirting, sheetings, muslins, dressmaking and all classes of general work. | 14 | 80 | OO | 22 |
| | 14 | 70 | O | 22 |
| | 14 | 60 | A | 20 |
| Light woolen goods, flannels, heavy silk, etc. | 16 | 50 | B | 18 |
| | 16 | 40 | C | 16 |
| | 16 | 30 | D | 14 |
| Heavy woolens and all coarse fabrics, etc. | 18 | 20 | E | 12 |

For needles and thread suitable for various classes of work on lock stitch machines, see table on page 12.

CHAPTER 3

# THE BINDER AND ITS MANY USES AS APPLIED TO FAMILY SEWING

## Preparing Binding for Use in the Binder

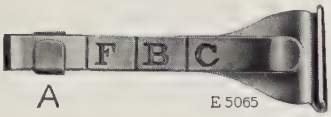



FIG. 41. THE BIAS CUTTING GAUGE

The Bias Gauge is very convenient to use when cutting bias bands from $\frac{7}{16}$" to $1\frac{3}{8}$" in width. By placing the gauge on the pointed end of the scissors and setting the blue spring indicator (A, Fig. 41) to the width desired, bias binding may be cut from any material. The letter F is the point to set the indicator for facings, B for binding and C for cording or piping.

## The Proper Width of Binding to Use with the Binder

Adjust the blue spring indicator on the Bias Gauge to the letter B and attach to the pointed end of the scissors, as shown in Fig. 42. Insert the material in the Gauge with the edge even with the indicator and cut as shown in Fig. 43. Always cut the material on the true bias for use with the Binder.

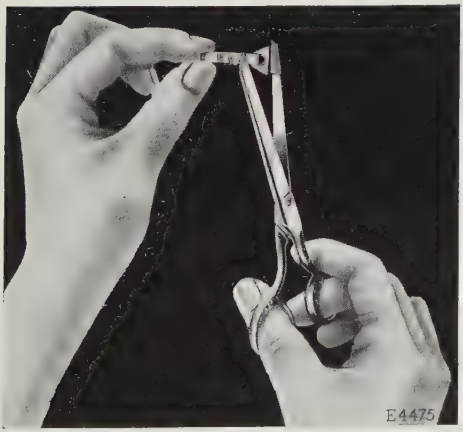



FIG. 42. ATTACHING BIAS GAUGE TO SCISSORS

FIG. 43. CUTTING BIAS STRIPS

The binding must measure from $\frac{7}{8}''$ to one inch in width, depending upon the texture of the material. Fabrics finished with dressing, such as percale or cambric, will work successfully when cut $\frac{7}{8}''$ wide, while soft material such as batiste, lawn or silk must measure from $\frac{15}{16}''$ to one inch in width. A trial with the Binder will quickly determine the proper width for the material to be used. When binding is cut too narrow the edges will not turn in, and if too wide, will fold over in plaits.

The cutting gauge will insure an even width of binding and a quantity can be cut in a short time.

### Joining Bias Strips

One yard of yard-wide material will make about 30 yards of bias strips $\frac{7}{8}''$ wide. It is usually an economy to purchase this amount and save any surplus for future use.

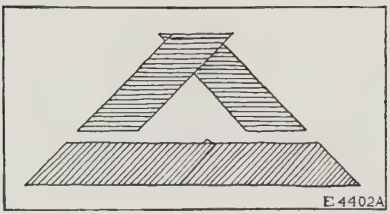



FIG. 44. THE RIGHT WAY TO JOIN STRIPS

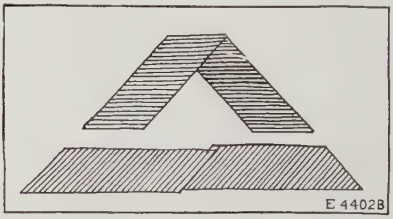



FIG. 45. THE WRONG WAY TO JOIN STRIPS

Cut the strips, lay the two diagonal ends together, as shown in Fig. 44, and stitch the ends together. The stitching should be as close to the edge as possible so that the seam will pass through the Binder freely. When the strips are straightened out, as shown in Fig. 44, the edges will be exactly even. Do not join the strips as shown in Fig. 45, as the edges will be uneven when straightened out. It is advisable to press the seams open with an iron and if the strips are not to be used immediately they should be wound on a piece of cardboard to keep them from stretching.

FIG. 46
THE BINDER

### The Binder

The Binder is included in the set of attachments furnished with most Family Machines. The work of this attachment consists in turning the edges of bias material and applying it to the seam or edge of a garment at one stitching. When properly adjusted and operated, the stitching will come close to the edge of the binding.

### Attaching the Binder to the Machine

Raise the needle to the highest point and remove the presser foot from the machine by loosening the thumb screw which holds it in place. Compare the foot of the Binder and the presser foot and you will see that they are attached to the machine in the same manner. Attach the Binder to the presser bar. Turn the balance wheel slowly toward you to make sure that the Binder is properly attached to the bar and that the needle goes through the centre of the needle hole.

Fig. 47
Cutting Point on Binding

### Inserting the Binding in the Binder

Cut the binding to a long point, as shown in Fig. 47. Insert the pointed end in the binder scroll, Fig. 48, until the pointed end comes through the lower end of the scroll.

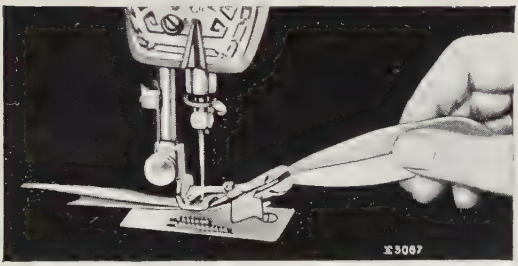


Fig. 48. Inserting Binding in Binder

Pull the binding through under the presser foot before starting to sew. Note that as the binding passes through the scroll of the Binder the edges are turned in.

### The Adjustment and Operation of the Binder

The edge to be bound should be held well within the center slot of the scroll, (A, Fig. 49). If the material is allowed to slip away from the scroll when near the needle, the edge will not be caught in the binding. With a little practice it is quite easy to hold the edge in the scroll.

Various materials and conditions require different adjustments of the Binder to bring the stitching close to the edge. A wider adjustment of the Binder is required when binding curves than is necessary when binding a straight edge.

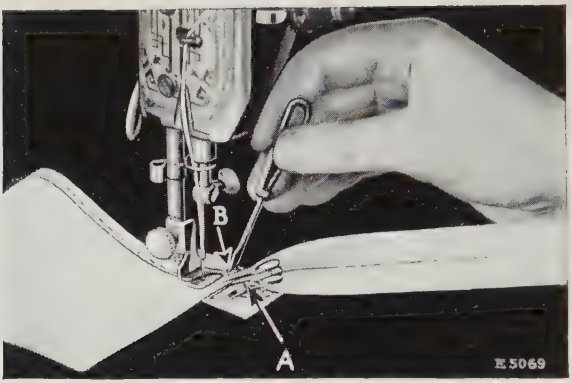



Fig. 49. Adjusting the Binder

To adjust the Binder for stitching, loosen screw B, Fig. 49, and move scroll to the right for a narrower adjustment and to the left for a wider adjustment. Care should be taken to see that the screw is well tightened after making an adjustment. To become perfectly familiar with the adjustment of the Binder, practice is necessary.

Never pull the binding as it feeds through the Binder, as bias material is very easily stretched and will be too narrow when it reaches the needle. When this occurs the edges will not be turned.

## Binding May be Purchased Cut and Folded for Use with the Binder

Folded bias binding may be purchased for use with the Binder. This binding comes in a variety of materials and colors. Folded bindings for use with the Binder must measure ½" in width. The No. 5 width in standard brands usually measures ½", but it is always well to be sure of this before purchasing.

Fig. 50. Insert Folded Binding in Outside Slot

Folded binding is inserted in the outside slot of the Binder, as shown in Fig. 50. The Binder is adjusted and operated in the same manner as when using unfolded binding. One-half inch braid or ribbon may be used in the same manner.

A binding inserted in the outside slot of the Binder will be turned only once. It is therefore necessary to have finished edges when using binding in this slot.

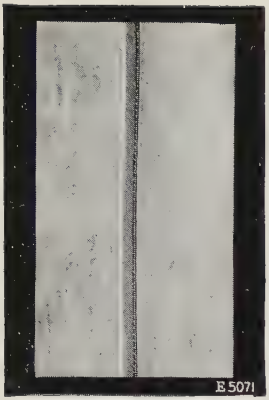



FIG. 51. PLAIN BOUND SEAM

### Plain Bound Seams

A plain bound seam is practical for many garments, such as petticoats, wash dresses, children's clothes, etc. Make a plain seam and trim close to the line of stitching.

Insert binding in Binder, adjust to sew close to the edge, insert the seam in the scroll of the Binder and start sewing, taking care to hold the edge well within the Binder scroll to insure a safe seam.

### Open Bound Seams

An open bound seam is practical on woolen garments where a double seam would be too bulky. The seam is stitched in the regular way after the garment is fitted. It is then trimmed evenly about ¾″ from the line of stitching and pressed flat with an iron. Both edges of the material are then bound with suitable material. Serge or woolens may be bound with light-weight percaline.

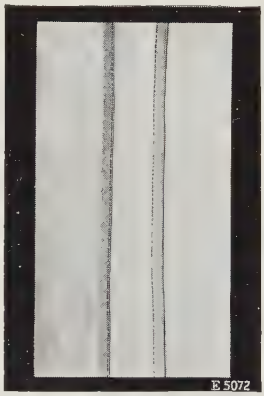



FIG. 52. OPEN BOUND SEAM

### Binding Outside Curves

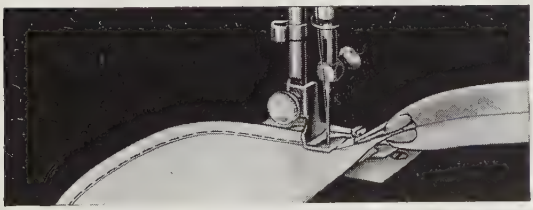


FIG. 53. BINDING AN OUTSIDE CURVE

Practice is required to bind a curved edge properly. The edge to be bound must be allowed to pass freely through the scroll and should not be crowded against the wall of it. Guiding should be from the back of binder and to the left of it, allowing the unfinished edge to swing naturally into the scroll of the binder.

When binding a curved edge (see Fig. 53) turn the material only as fast as the machine sews. It is not possible to hold the material in the entire length of the scroll when binding a small curve.

Do not push the material in too fast, as the edge will then become puckered, and do not stretch the material or the curve will not be the proper shape when finished. If the stitching does not catch the edge of the binding, the scroll should be adjusted a trifle to the left.

Binding applied with the Binder will have a neat tailored finish that cannot be gained by basting the binding in position and then stitching with the presser foot.

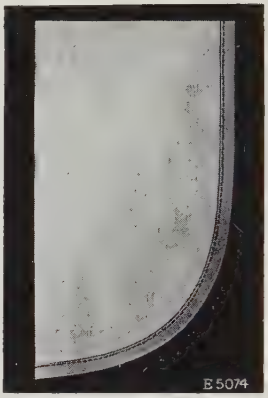



Fig. 54. Sample of Outside Curve

## Binding Inside Curves

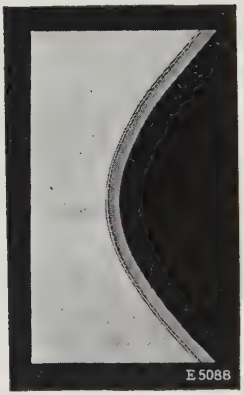



Fig. 55. Sample of Inside Curve

It will be necessary to practice binding an inside curve on various kinds of material, as this curve is found on nearly all garments which may be finished with a bound edge.

When binding an inside curve with the Binder, straighten out the edge as it is being fed into the attachment. When doing this care should be taken not to stretch the edge of the material.

If the material is soft, like batiste or crepe de chine, add a row of machine stitching close to the edge of the curve before binding.

## Applying a French Fold to a Curve

Binding makes a very attractive trimming when applied as a French fold in a contrasting color, or when made of white and applied to a colored garment. To apply the French fold to a garment, insert the binding in the Binder in the regular way and

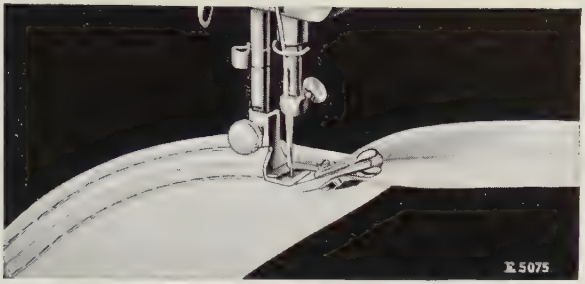



Fig. 56. Applying French Folds

place the garment to which the trimming is to be applied directly under the attachment. See Fig. 56.

It is well to mark a line on the material where the fold is desired.

### Binding Plackets

It may appear difficult at first to bind a placket with the Binder, but it is very simple after you have learned to fold your material properly at the point of the placket. To bind a placket,

Fig. 57. Binding a Placket

stitch down the left side of slit until the point of placket is about to enter scroll, then swing right side of slit sharply into a straight line, the fullness of the material forming a V at the left.

Run the machine slowly as the point is reached and take care that too much material is not allowed to feed into the Binder.

For practice, cut a slit about five inches deep in muslin and learn to fold it in a straight line before starting to bind. When you have mastered the placket you will find it quite easy to bind scallops.

The bound placket is practical to use on any garment where a wide overlap is not desired.

If snap fasteners are used, they may be sewn to the edge of the binding and the turned-back edge may be blind-stitched to the garment, as shown in Fig. 58.

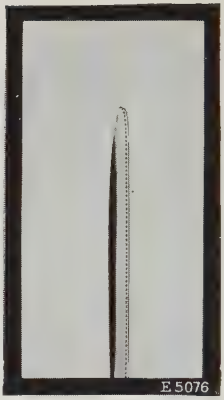



Fig. 58. Sample of Bound Placket

Fig. 59. Sample of Bound Scallops

### Bound Scallops

The same method used in binding an outside curve is used for binding scallops. The point at the top of the scallop is bound in exactly the same manner as the placket. Practice the binding of a small single scallop first before attempting to bind a row of scallops.

If the material is soft and liable to stretch, add a row of machine stitching close to the edge of the scallop before starting to bind the edge.

### Binding a Square Corner

To bind a square corner, apply the binding along one side to within an $\frac{1}{8}''$ of the edge of the material, stopping the machine with the needle and take-up at the highest point. Then draw the material back away from the needle far enough to pull about two inches of the binding through the Binder. Fold and crease the binding to a square mitered corner, turn the material and draw it back into the Binder, bringing the needle down through the binding close to the corner, as shown in Fig. 60. Draw the slack thread back through the needle and tension. Be sure the

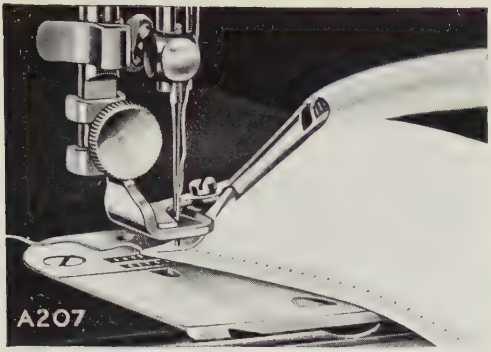



Fig. 60. Turning a Square Corner

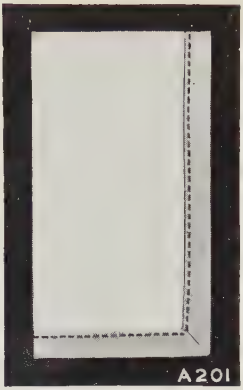



Fig. 61. Sample of Square Corner

new edge of the material is properly placed in the scroll of the Binder and begin stitching slowly until you are sure the material is feeding properly. The loop of the thread on the underside at the corner may be tied or cut off without fear of ravelling, as the stitch is locked.

### Making Button Loops with the Binder

To make button loops, first stitch together a piece of binding of the desired material and length by using the Binder. You will then have a quarter-inch fold with the edges stitched together. Cut a strip of binding long enough to make a loop of the desired size and fold it to a point, by bringing the two stitched edges together, having ends even. Care should be taken to keep all right sides uppermost. Fasten the loop at the point with a hand sewing needle.

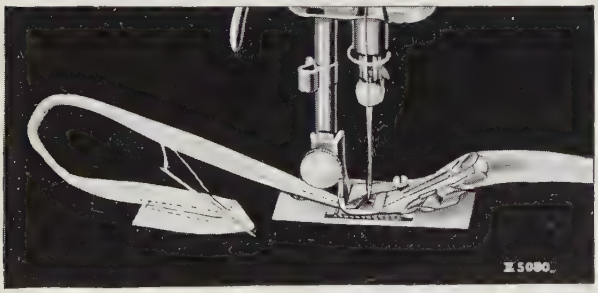



Fig. 62. Making Button Loops

Fig. 63 Button Loops Applied

The loops may be fastened to the garment in any desired manner. If used as a trimming they may be applied under a tuck or plait, and when used on the edge of the garment they may be applied with a facing.

## Bound Buttonholes Made with the Binder

Take a strip of material as wide as you wish to make your buttonholes apart and bind each side. For example, if you wish to make your buttonholes two inches apart take a two-inch strip of material as shown in Fig. 64, at A, and bind each side as shown at B.

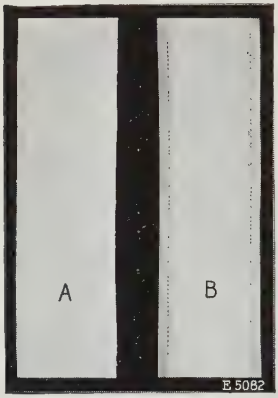



Fig. 64. Starting Bound Buttonholes

Measure the diameter of the button you wish to use and cut the bound strip into pieces one-half inch wider than the button. See Fig. 64-B. After the strip is cut into sections, bind them together so that the bound edges just meet, as shown in Fig. 65. Bind one edge of this strip, using the Binder, and before binding the other edge, place the edge of the garment even with the strip of buttonholes and bind both edges at one stitching. See Fig. 66. The free edge of the binding can then be stitched flat to the garment.

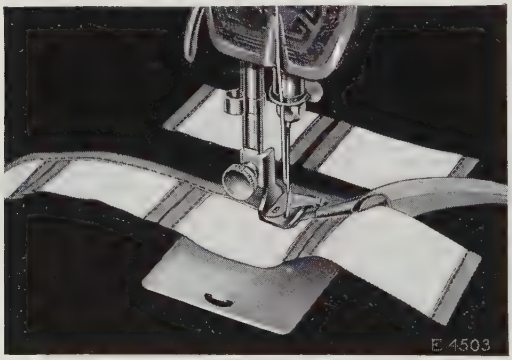



Fig. 65. Binding Pieces Together

If an extra-strong buttonhole is desired, a linen tape may be used for the binding. This must, however, be one-half inch in width and be used in the outside slot of the Binder.

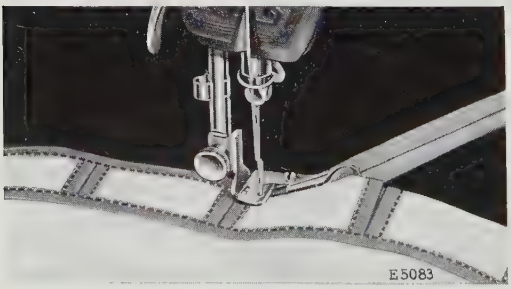



Fig. 66. Completing Bound Buttonholes

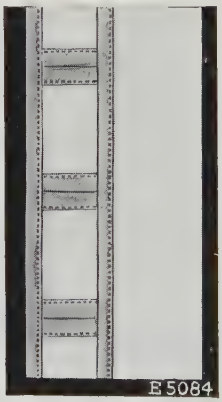



Fig. 67. Sample of Bound Buttonholes

## Making Cut-In Buttonholes with the Binder

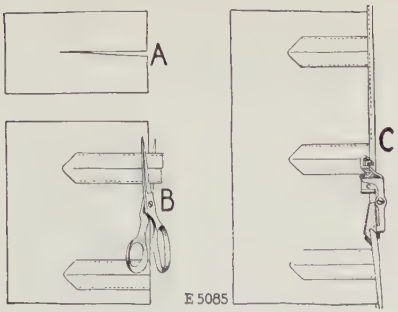



Fig. 68. Cut-in Buttonholes

The cut-in buttonhole is made in the same way as the placket. Cut a slot in the edge of the material to the depth you wish to make the buttonhole and shape it as shown in Fig. 68, at A. Fold the material in the same manner as in binding a placket. See Fig. 57. Trim off the edge of the binding, as shown in Fig. 68, at B, and bind the edge with the Binder as shown at C.

## Binding and Applying Rick-Rack Braid to the Edge of a Garment at One Stitching

Rick-rack braid may be purchased at any notion counter and comes in a variety of colors and widths. This braid makes an attractive trimming for house dresses and aprons and may be applied to an outside or an inside curve at the same time the edge is bound.

Insert the edge to be bound, together with the rick-rack braid, in the scroll of the Binder, as shown in Fig. 69. The rick-rack braid

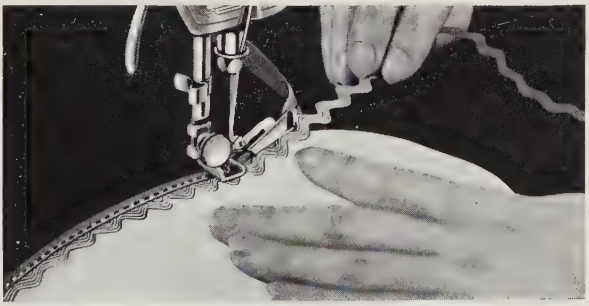


Fig. 69. Binding and Applying Rick-Rack Braid

should be fed into the binder in a straight line and against the wall of the scroll, regardless of the shape of the garment to which it is being attached. This is especially true in binding an outside curve.

FIG. 70. EDGE TRIMMED WITH BINDING AND RICK-RACK BRAID

A fine rick-rack braid is most effective trimming on organdie dresses or collar and cuff sets.

This braid is very inexpensive, and solves the problem of trimming cotton garments when a little decoration is needed.

Rick-rack braid may be applied equally well to outside or inside curves and because of the weave will lie flat after the garment is laundered.

Other types of cotton braid trimmings may be applied in the same manner.

### Finishing the Neck Edge of a Garment with Binding

The problem of a neat binding for the neck edge or sleeves of a garment is easily solved by applying binding with the Binder. Fig. 71 shows the neck edge of a garment trimmed with a narrow plaiting which was made with the Ruffler as directed on page 92. After the plaiting was stitched to the edge of the garment, the seam was trimmed close to the line of sewing and the edge bound with suitable material, using the Binder.

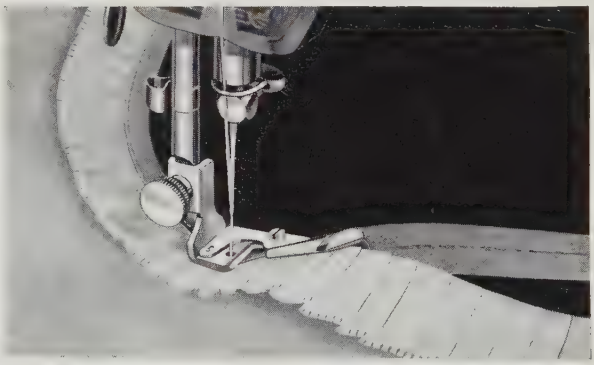


FIG. 71. FINISHING AN EDGE WITH RUFFLING AND BINDING

Silk binding may be applied in this manner by cutting the silk on a true bias, using the cutting gauge as directed on page 53. When using silk for binding, a small strip should be cut first, and tested in the Binder to determine the correct width. Soft silk will work satisfactorily when cut about one inch in width.

## Applying Military Braid with the Binder

Most attractive trimmings for serge or other woolen dresses may be developed by using military braid as a binding. The braid must measure one-half inch in width for use with the Binder and it must be inserted in the outside slot.

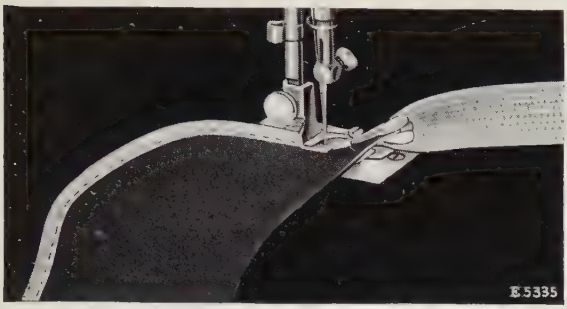



FIG. 72. BINDING WITH MILITARY BRAID

FIG. 73. SAMPLE OF MILITARY BRAID APPLIED WITH BINDER

Curved edges on woolen material are quite as easy to bind as on cotton material. Military braid makes an excellent finish for the neck and cuffs or the panels on a serge dress. It is impossible to give this braid a tailored finish when applying it by hand or first basting and then stitching it.

This braid comes in a variety of colors in silk and cotton.

## A Suggestion for Trimming

Binding may be stitched flat to the material to form a lattice effect by placing the binding in the Binder in the regular way and the material to which the binding is to be applied under the attachment, following directions for making French folds on page 58. Binding may also be applied to paper in this manner, and when the paper is torn away the binding will be stitched together in the form of a lattice insertion, which makes a most attractive trimming for dresses of silk or cotton.

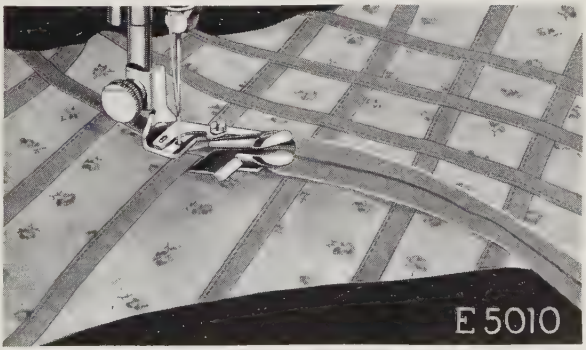



FIG. 74. THE BINDER MAKING LATTICE TRIMMING

## Suggested List of Garments that May be Finished with Binding

The edge of cooking aprons and caps.

Percale kitchen aprons.

Dust caps.

Iron holders.

The neck and sleeves of night gowns—narrow lace may be applied to edge of binding by hand or machine.

The edge of chemise—binding may be decorated with feather stitching or French knots.

The edges of underwaists for children—the buttonholes may also be made with the Binder.

Plackets on underwear.

Rompers for children—edges of garment and buttonholes.

Children's dresses of gingham or print.

Boys' sailor suits—collar and cuffs bound and trimmed with French folds.

Organdie dresses—edges bound and French folds applied.

Button loops for cotton or silk dresses.

Cut-in buttonholes for tailored garments.

Rick-rack braid and binding for house dresses and aprons.

Military braid for finishing the edge of serge or other woolen dresses or coats.

Bound scallops for underwear or dresses.

Bound scallops for bed spreads or curtains.

Bound tabs for tailored dresses.

CHAPTER 4

# THE FOOT HEMMER AND THE ADJUSTABLE HEMMER

## THE FOOT HEMMER

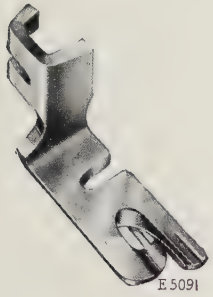



FIG. 75. THE FOOT HEMMER

The Foot Hemmer (Fig. 75) is attached to the machine in place of the presser foot. Raise the needle to the highest point, loosen the thumb screw which clamps the presser foot to the presser bar and remove the presser foot. Attach the Foot Hemmer to the bar, taking care to tighten the screw firmly so that the Hemmer will not become loose when the machine is running. Turn the balance wheel slowly to make sure that the needle goes through the center of the needle hole and that the lower thread is properly pulled up.

### How to Start the Hem at the Very Edge

How to start the hem at the very edge of the material is of great importance in learning to use the Hemmer. If the hem is not started at the edge and the material is pulled bias a perfect hem cannot be made.

There are several ways of starting the hem at the edge, but the most practical one is as follows:

1. Fold over about $\frac{1}{8}''$ of the edge of the material at the starting point for a distance of about one inch.

2. Place the material in the Hemmer on an angle leading to the right at a point just beyond the fold.

3. Draw the material toward you through the Hem-

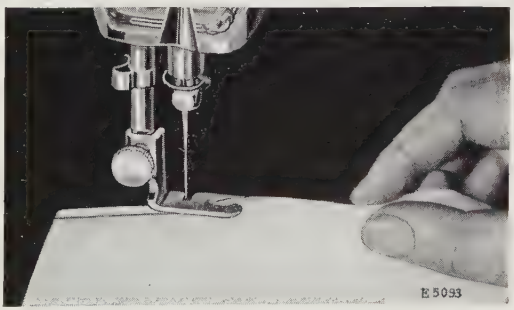



FIG. 76. STARTING A HEM AT THE EDGE

mer, as shown in Fig. 76, at the same time making the second fold at the very edge. Continue to draw the material through the Hemmer until the edge is just under the needle. Place the upper and lower threads together under the Hemmer foot and assist the starting of the hem by slightly pulling the threads from the back as the machine is run.

This method makes it possible to start the hem very easily and neatly at the edge after a little practice.

Another way to start a hem is by clipping off a corner of the material and slipping the edge carefully into the scroll of the Hemmer. It is not possible, however, to make a perfect starting in this manner.

## Making a Hem with the Foot Hemmer

Fig. 77. Making a Hem with the Foot Hemmer

The same width of material must be kept in the Hemmer at all times. After placing the correct width of material in the Hemmer hold it in a straight line and you will find it quite easy to make a perfect hem. See Fig. 77.

If too much cloth is fed into the Hemmer, the hem will not be straight, while if too little is fed in, the edge of the hem will not be turned.

Practice Hemming with the Foot Hemmer until you can make a perfect hem with ease before attempting to hem a garment.

Fig. 78. Hem Made with the Foot Hemmer

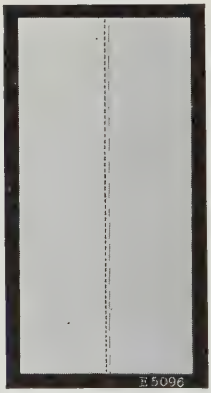



Fig. 79. Hemmed Seam Made with the Foot Hemmer

## Hemming Over a Seam with the Foot Hemmer

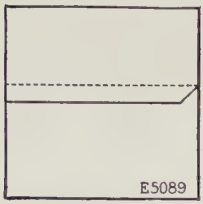



Fig. 80. Bias Corner on Seam

When a narrow hem is to be made over a French seam, the seam should be pressed as flat as possible and as the seam is reached in hemming, a bias corner should be cut from the seam as shown in Fig. 80. This method makes it possible to hem over a fairly heavy seam without difficulty.

If an open seam is used, it should be basted flat to the garment about one-quarter of an inch from the edge. A bias corner may then be cut from each edge of the seam to prevent the edge from turning in the wrong direction as it feeds into the Hemmer.

## Making a Hemmed Seam with the Foot Hemmer

The hemmed seam is very practical to use on underwear, or in fact on any garment where a straight seam is used and where a small double seam would be suitable.

When using this seam the garment must first be fitted and the edge of the material trimmed, allowing for about one-eighth inch seam. The two edges are placed together and inserted in the Hemmer in the same manner as a single hem. If the material is bulky, the edge of the upper piece of material may be placed about one-eighth inch in from the edge of the lower piece. See Fig. 81.

The free edge of a hemmed seam may be stitched flat to the garment if desired. First open the work out flat, then place the hem in the scroll of the Hemmer, which acts as a guide, holding the edge of the hem in position while it is being stitched.

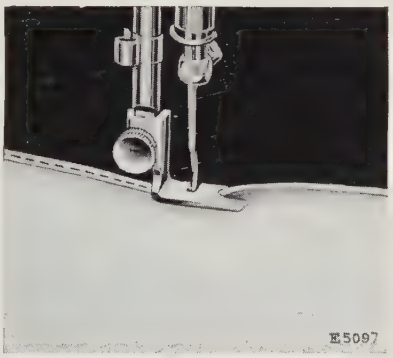



Fig. 81. Making a Hemmed Seam

If the seam is stitched flat to the garment one row of stitching is visible on the right side.

The hemmed seam may be used on muslin, lawn, percale, organdie or other fine materials where a narrow seam is desirable. It is not practical to seam woolen material in this manner.

## Making a Felled Seam with the Foot Hemmer

To make a felled seam on the right side of the material with the Foot Hemmer, place the wrong sides together, having the edge of the under piece projecting beyond the upper piece about one-eighth of an inch. Stitch the two pieces together, using the Foot Hemmer as a sewing foot. The outside edge of the seam should come even with the outside of the Hemmer, while the inside edge should be just safely caught with the needle. See Fig. 82. If the fell is desired on the wrong side of the material, place the right sides together for the first stitching.

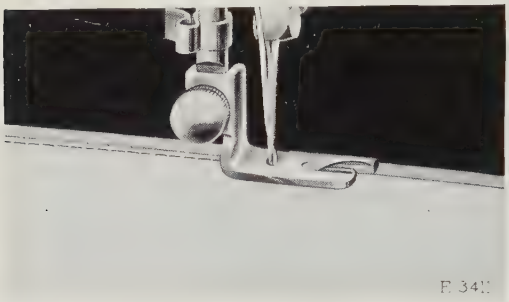


Fig. 82. Starting a Felled Seam

Open the seam and press flat with the finger. Hem the free edge of the seam in the usual way, sewing it flat to the garment at the same time. See Fig. 83.

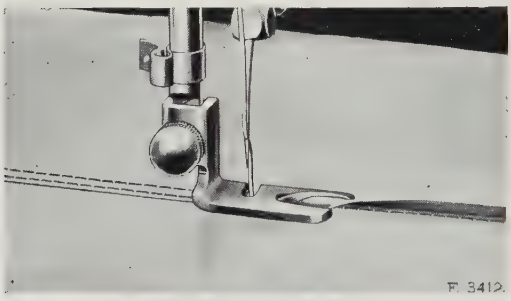


Fig. 83. Finishing a Felled Seam

This seam will require a little practice but it is very easily done after you have made your seam of uniform width at the first stitching and have practiced the plain hem sufficiently to enable you to make a perfect one. If you are felling over a seam it is necessary to have the seam pressed flat, and it is often advisable to help the Hemmer over the seam by pulling the work slightly from the back just as the seam is reached and to clip a bias corner from the seam as shown in Fig. 80.

The felled seam is practical to use on men's shirts or on any garments where a strong flat seam is desirable.

Fig. 84. Felled Seam

## Hemming and Sewing on Lace at One Operation

Start the hem in the regular way and with the needle holding the hem in position, raise the presser bar sufficiently to allow the edge of the lace to be slipped in under the Foot Hemmer, at the same time bringing it up through the slot at the right of the Hemmer. See Fig. 85. Lower the bar, turn the balance wheel and catch the edge of the lace with the needle. Guide the hem with the right hand and the lace with the left. Care should be taken not to stretch the lace as it is being fed into the Hemmer.

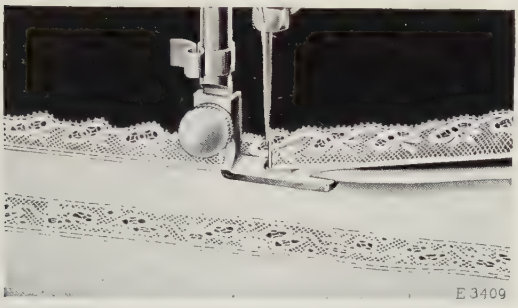



FIG. 85. HEMMING AND SEWING ON LACE

It is not practical to sew gathered lace on with the Foot Hemmer, as the fulled lace catches in the Hemmer slot.

Practice this operation with the Hemmer, using strips of material in place of lace until you have learned to hold it correctly.

FIG. 86. SAMPLE OF HEMMING AND SEWING ON LACE AT ONE OPERATION

## The French Way of Applying Lace

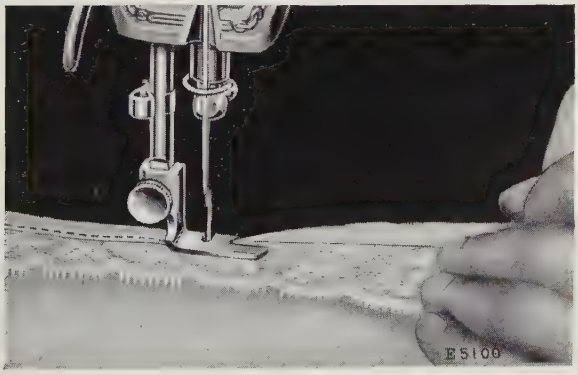



FIG. 87. APPLYING LACE THE FRENCH WAY

A very attractive way of applying lace so that the stitching of the hem is not visible is to start the hem in the regular way, slipping the lace in from the left as you would the second piece of material when making a hemmed seam. See Fig. 87.

Fig. 88. Lace Applied the French Way

Fig. 89. Hemmed Curve

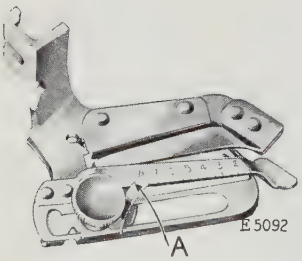



Fig. 90. The Adjustable Hemmer

It is necessary to feed in a uniform amount of lace when applying it in this manner and practice is required to do it perfectly.

### Hemming Fine Materials with the Foot Hemmer

When hemming fine materials such as georgette or crepe de chine with the Foot Hemmer the material will not feed through properly and the stitch will be very much shorter than when sewing with the presser foot on the same material.

To overcome this difficulty, and to assist in holding soft materials so that they will be turned properly with the Foot Hemmer, insert a piece of paper under the foot of the Hemmer and allow it to feed through with the material. Strips of thin paper or the edges of newspapers are very convenient for stitching. Never use tissue paper, as this will be very difficult to pull away from the material.

## THE ADJUSTABLE HEMMER

The Adjustable Hemmer (Fig. 90) is a part of the set of attachments supplied with most family machines. This Hemmer will make a hem of any desired width up to one inch. For wider hems the scale may be released and thrown out of position.

Remove the presser foot and attach the Hemmer to the presser bar, taking care that the needle comes in the center of the needle hole after you tighten the thumb screw.

## How to Adjust the Hemmer for Hems of Various Widths

To adjust the Hemmer loosen the screw and you will then be able to move the hemmer guide to the right or to the left. Note the pointer (A, Fig. 90) which is used in connection with the scale of figures on the Adjustable Hemmer.

The Hemmer may be adjusted as follows:

| | Pointer set at: |
|---|---|
| 1—for | 1/8″ hem (approximate) |
| 2— " | 1/4″ " " |
| 3— " | 3/8″ " " |
| 4— " | 1/2″ " " |
| 5— " | 5/8″ " " |
| 6— " | 3/4″ " " |
| 7— " | 7/8″ " " |
| 8— " | 1″ " " |

After setting the Hemmer, care should be taken to see that the adjusting screw is well tightened before starting to sew.

Fig. 91

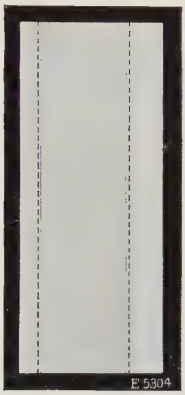



Fig. 92

Hems Made with the Adjustable Hemmer

## How to Insert the Material in the Adjustable Hemmer

Fold over the edge at the end of the material to be hemmed, as instructed for starting a hem with the Foot Hemmer. Place the material in the Hemmer under the scale and draw it back and forth until the hem is formed.

You will then be able to determine the width and to fold over the end of the hem for the second turning. Draw the material back until the end comes directly under the needle. Lower the presser bar and sew, guiding sufficient material in the Hemmer to turn the hem properly. See Fig. 93.

If the hem is not started at the edge it will run bias and not come out even at the other end.

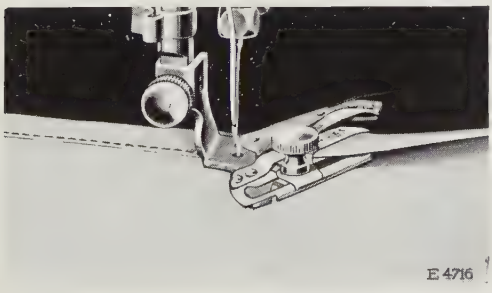



Fig. 93. Hemming with the Adjustable Hemmer

Fig. 94. Hem on Bias Lawn

### Hemming Soft Material

When hemming soft material that is liable to stretch it is well to slip a piece of paper under the Hemmer next to the feed. This will prevent the material from stretching and assist in turning the hem.

### Hemming Glass Toweling

When hemming glass toweling or striped material of any kind it is quite necessary that the stripes meet. This can be done by starting the hem at the very edge and guiding the material so that the edge is not stretched. It is well to practice hemming on this kind of material, for by matching each stripe you prove your ability to hem any kind of material perfectly.

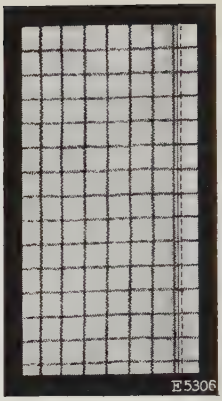



Fig. 95. Sample of Hemming on Glass Toweling

### How to Prepare a Hem on Table Linen

Much time is spent in turning the hem of table linen to make it ready for hand sewing. The Hemmer is very valuable for this operation. Set the Hemmer for the desired width of hem, take the thread from the needle and run the linen through the Hemmer.

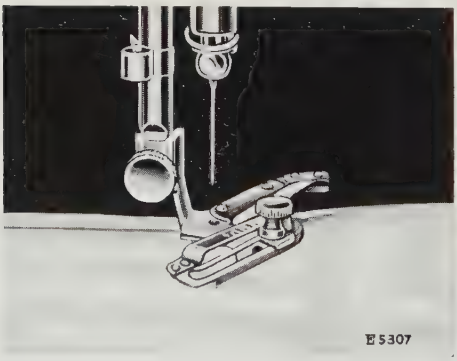



Fig. 96. Preparing a Hem on Table Linen for Hand Hemming

Fig. 97. Sample of Hem Prepared on Table Linen

You will find that the hem has been evenly turned, ready for the hand sewing and the holes made by the machine needle have softened the linen, making it quite easy to do the hand work. See Fig. 97.

Table linen or other material may be prepared for hemstitching in this manner.

### How to Make a Wide Hem with the Adjustable Hemmer

To make a hem wider than one inch, loosen the adjusting screw and throw the scale guide out of position.

Fold and crease the hem the desired width by hand, place the edge in the Hemmer, as shown in Fig. 98, and commence to sew. The Hemmer will now make one turning of the edge. The hem must be kept flat at all times to retain the desired width.

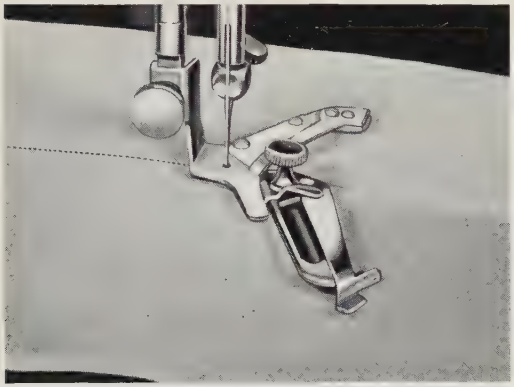


Fig. 98. Making a Wide Hem with the Adjustable Hemmer

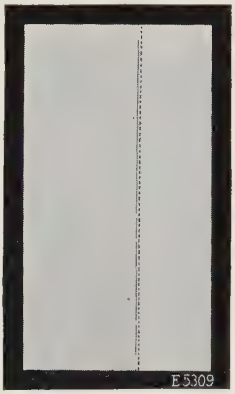



Fig. 99. Wide Hem Made on the Adjustable Hemmer

## Suggested List of Garments that May be Hemmed with the Hemmers

Kitchen and hand towels.

Muslin curtains.

The edges of ruffles or flounces for lingerie dresses or underwear

Hemming and sewing on lace for ruffles.

Setting in lace insertion for underwear or children's clothes.

Percale or gingham kitchen aprons.

Bottom edge of men's shirts.

Edges of silk underwear.

Apron strings of lawn, percale or gingham.

Baby bonnet strings.

Ruffles for boudoir pillows.

Seams on heavy material to prevent fraying.

Sheets—small and wide hem.

Table linen—hem turned, ready for hand sewing.

Over drapes of cretonne.

Plaitings of lawn or organdie for dresses or collar sets.

# CHAPTER 5

## THE PRACTICAL USE OF THE TUCKER

### The Parts of the Tucker and Their Uses

Select the Tucker from the box of attachments, compare it with Fig. 100 and note the names and uses of the various parts, as follows:

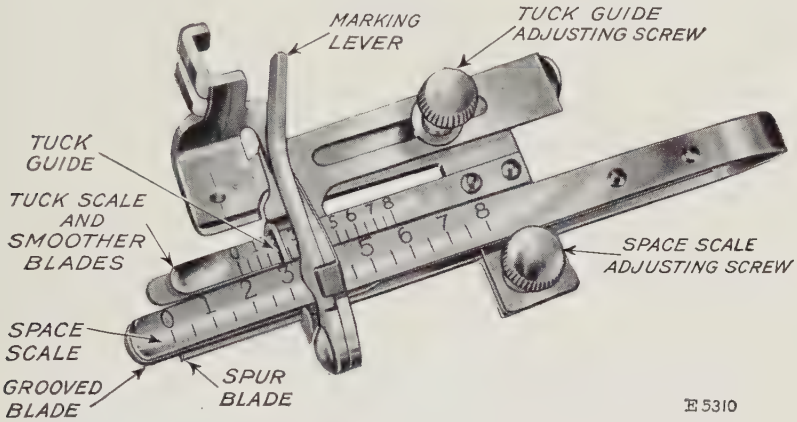



FIG. 100. THE TUCKER AND ITS WORKING PARTS

**The Tuck Guide,** which is adjustable and may be set for any desired width of tuck.

**The Tuck Scale,** containing figures which indicate different widths of tucks. The tuck scale also acts as a smoother blade, keeping the tucks of uniform width.

**The Tuck Guide Adjusting Screw,** by means of which the tuck guide may be set at any point on the tuck scale.

**The Space Scale,** containing figures on the upper blade which indicate the width of the space between tucks. The middle or **grooved blade** contains a groove into which the material is pressed by the **spur** at the end of the lower or **spur blade,** thus marking the goods for the folding of the next tuck.

**The Space Scale Adjusting Screw,** by means of which the space scale may be set at any desired point.

**The Marking Lever,** which presses on the groove blade, marking the material as it passes between the grooved and spur blades.

A careful study of the Tucker parts and their relations to each other before using this attachment will make its operations quite clear.

### Where to Oil the Tucker

The only place on the Tucker that requires oiling is the stud on which the marking lever works. See Fig. 103. One drop of oil occasionally is sufficient. Careless oiling will result in oily blades and soiled material. When the marking lever does not move up and down freely it requires oiling. If neglected it may become so dry that it will stay down and cause a drag on the material instead of lifting freely as the mark is made.

### To Attach the Tucker to the Machine

Raise the needle bar to the highest point, remove the presser foot from the machine and attach the Tucker in its place. Care should be taken to see that the Tucker is securely fastened to the presser bar and that the needle goes through the center of the needle hole. Note the position of the marking lever, making sure that it is in the lower position and that the needle clamp works on it as the machine sews.

### How to Adjust the Scales on the Tucker

The width of the tucks and the space between them is determined by the adjustment of the scales. Adjustment for width of tuck is made by loosening the tuck guide adjusting screw, which allows you to move the tuck guide to the desired figure on the tuck scale. The tuck guide should be set just over the figure you wish to use. The adjusting screw should always be well tightened.

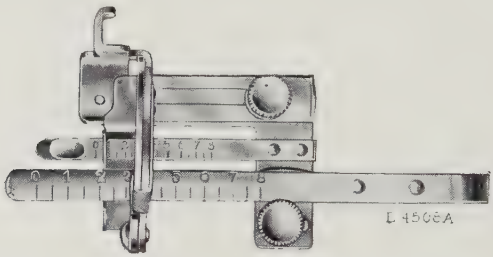



Fig. 101. Tucker Set at Pin Tuck and 2 Space

To adjust for the width of space between the tucks, loosen the space scale adjusting screw and move the space scale until the desired figure is directly in a line with the center of the needle hole. You will find a line in front and back of the needle hole to indicate the center.

Before starting to sew, tighten the screw well to prevent the scale shifting when the Tucker is in operation.

The figures on the tuck scale indicate the width of tuck in eighths of an inch, the marks between figures are sixteenths.

The marks on the space scale are double the width of those on the tuck scale, so that when both scales are set at the same figure, blind tucks without spaces between them are made.

To make space between tucks, first set the tuck scale, then move the space scale to the same number and as much farther to the left as you wish to have space. Each number on the space scale represents one-quarter of an inch and each mark between numbers one-eighth of an inch.

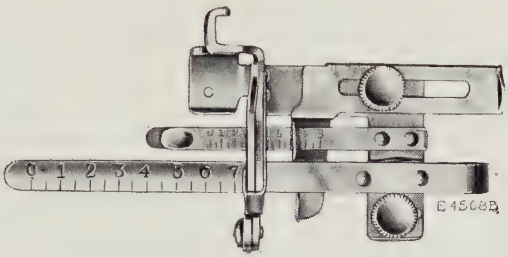



Fig. 102. Tucker Set at 6 Tuck and 6 Space

Use the table below to assist you in setting the Tucker.

| | TUCK GUIDE | SPACE SCALE |
|---|---|---|
| 1/8″ tucks with no space | 1 | 1 |
| 1/8″ " " 1/8″ " | 1 | 1½ |
| 1/4″ " " no " | 2 | 2 |
| 1/4″ " " 1/4″ " | 2 | 3 |
| 1/2″ " " no " | 4 | 4 |
| 1/2″ " " 1/2″ " | 4 | 6 |
| 1″ " " no " | 8 | 8 |

Note Fig. 101, showing Tucker set at a pin tuck and 2 for space; also Fig. 102, Tucker set at 6 for tuck and 6 for space.

### The Proper Length of Stitch to Use for Tucking

About 20 stitches to the inch is the average to use for tucking lawn or muslin. However, this is largely a matter of choice. A shorter stitch may be used if desired, but a stitch longer than this is not attractive.

To test for the number of stitches, sew on a double fold of the same material you are going to tuck, mark off one inch with the tape measure and count the stitches.

Do not use an extremely short stitch on taffeta, as it may break the threads in the material and cause it to crack. Never use a long stitch on fine material, for it is liable to pucker unless the tensions are most carefully adjusted.

Always test out the Tucker on a piece of the material you are going to tuck and make sure the tensions and size of tuck are satisfactory before starting to tuck.

## Where to Insert the Material to be Tucked

Fold and crease the first tuck for its entire length by hand, insert it in the Tucker from the left, placing it between the grooved blade and the spur blade of the space scale, and between the two blades of the tuck scale. See Fig. 103.

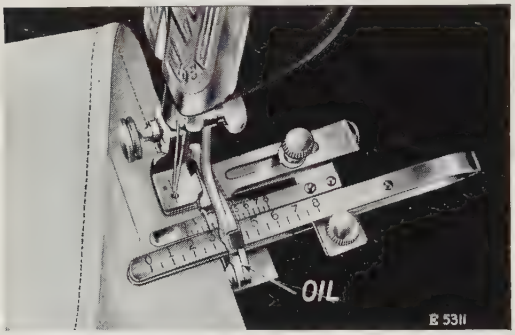



Fig. 103. Proper Position of Material in Tucker

Care should be taken to see that the material is placed far enough in the Tucker to feed against the tuck guide. Draw the material towards you until the edge is directly under the needle. Lower the presser bar and sew. You will note that the Tucker is now making a mark for the next tuck.

## How to Make Even Tucks

When the first tuck is finished, fold the material on the mark made by the spur during the sewing of the first tuck. Insert the folded edge in the Tucker exactly as for the first tuck except that it is important to see that the first tuck is against the inside of the spur. After lowering the presser bar, raise the material slightly and adjust it until the folded edge is just touching the tuck guide and the first tuck is against the spur. This insures the feeding of the material evenly into the smoother blades, where it is pressed flat ready for sewing. Until you are thoroughly familiar with the use of the Tucker always lift the material when starting each tuck to be sure that the preceding tuck is against the spur.

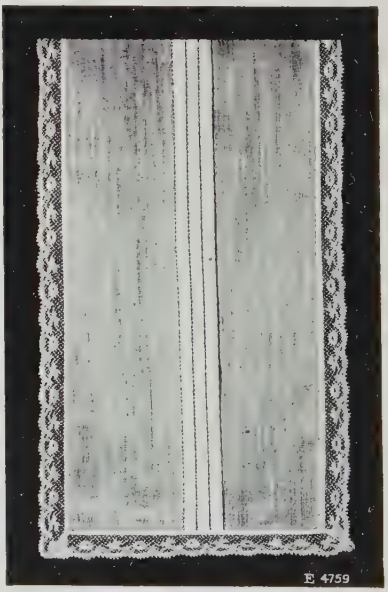



Fig. 104. Sample of One-Eighth Inch Tucks

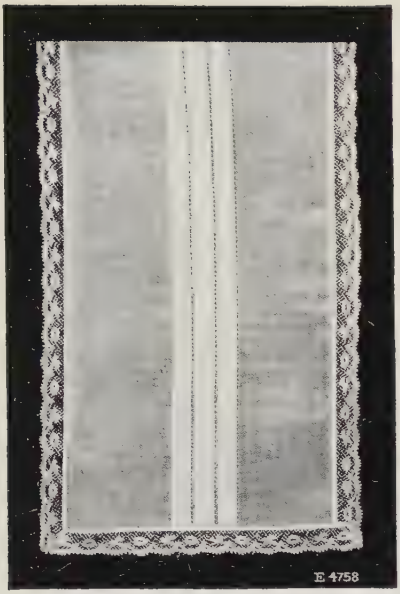



Fig. 105. Sample of One-Quarter Inch Tucks

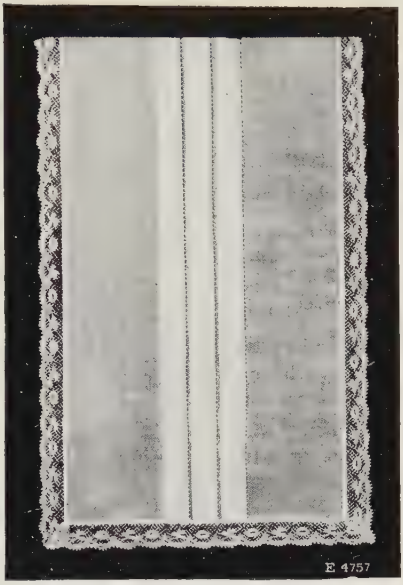



Fig. 106. Sample of One-Half Inch Tucks

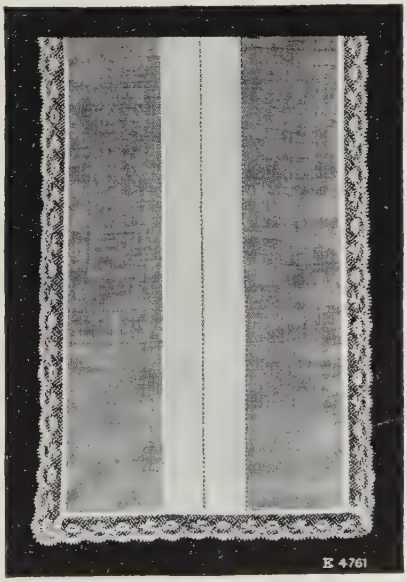



Fig. 107. Sample of Three-Quarter Inch Tucks

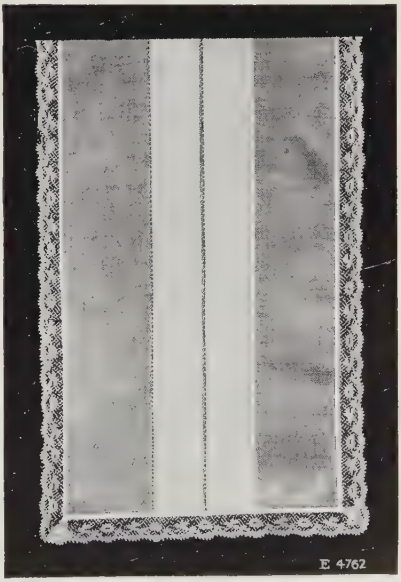



Fig. 108. Sample of One Inch Tucks

Tucks must be even to be beautiful and the Tucker will make them so if properly handled. The material should be inserted between the upper and lower blades of the tuck scale. When the material is not placed between the two smoother blades it tends to work away from the guide and uneven tucks are made.

Tucks make very attractive trimming when well made, but to be sure of this result care should be taken to see that all conditions are right. The thread used should match as closely as possible the threads of the material upon which you are sewing and a good needle of the proper size for the thread must be employed. See page 12. The length of stitch should be in proportion to the texture of the material.

### How to Tuck Without Marking

As the needle bar descends, the needle clamp strikes the marking lever, pushing it down and pressing the grooved blade against the spur, thus marking the material which passes between them. When no mark is desired, as in making the last tuck, the marking lever may be pulled upward toward the operator, where it is held in place by the spring. In this position it is out of contact with the needle clamp and no mark is made.

This feature is valuable when using the Tucker in connection with a commercial pattern or when tucking heavy material which the Tucker will not mark. When using a commercial pattern, the tuck is folded on the line of perforations and inserted in the Tucker after the Tucker has been adjusted to suit the size of tuck called for on the pattern. The Tucker then acts as a sewing guide and keeps the tuck of even width without basting.

### How to Adjust a Tucker that Does Not Mark Properly

If the material is not placed between the grooved blade and the spur, or if the lever is not down in the proper working position, the Tucker will not make a mark.

If the Tucker makes only a faint mark, it is because the spur does not come exactly in the center of the groove. Remove the Tucker from the machine, hold it upside down, press the blades together and observe whether the spur comes exactly in the center of the groove. If not, bend the grooved blade slightly with a pair of pliers until the correct position is obtained.

## How to Tuck Silk or Chiffon

It is possible to tuck silks, such as taffeta, quite as easily as cotton material. Soft materials, such as crepe de chine and georgette, are harder to crease, but may be tucked successfully if a piece of paper is slipped under the Tucker. It is quite necessary that the tensions be properly adjusted before starting to tuck fine materials, as a tight tension will pucker the material and cause the thread to break when the tuck is pressed.

## How to Make Fine Tucks and Cross Tucking

When making fine tucks it is quite necessary to use thread of the proper size to suit the material to be tucked. A fine needle, fine thread and a fine stitch are the secrets of attractive tucking. Many ready-made garments trimmed with tucking are unattractive because the thread and stitches are too coarse.

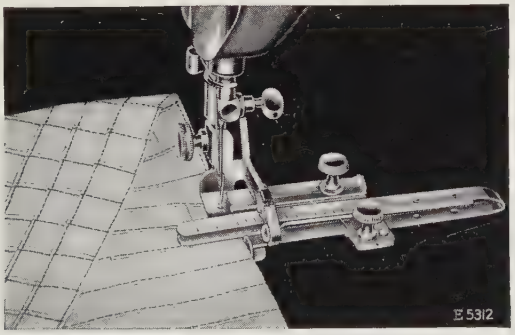



Fig. 109. Cross Tucking

When making cross tucking, first decide on the combination of tuck and space you wish to use, and set the Tucker. Tuck the entire piece of material lengthwise, then crosswise over the tucks. See Figs. 109 and 111. Care should be taken to see that the tucks lie in the proper direction before starting to cross the tucks. It is well to press the tucks with an iron before the cross tucks are made to prevent the material from becoming bias as it is tucked.

Attractive cross tucking may also be made by first tucking the material lengthwise and then bias across the tucks.

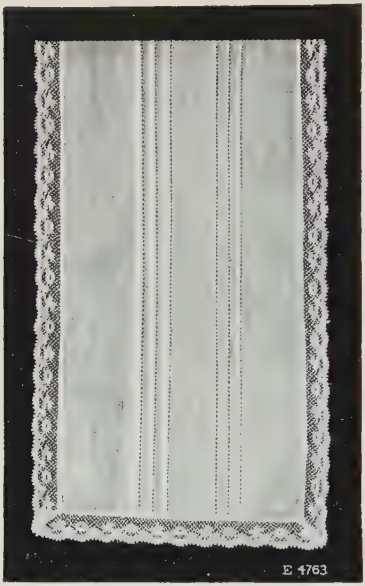



Fig. 110. Sample of Fine Tucking

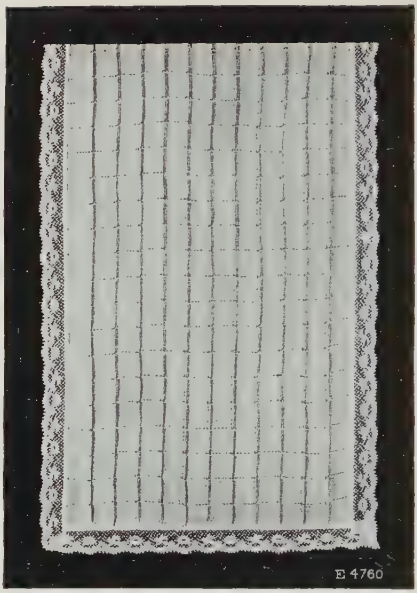



Fig. 111. Sample of Cross Tucking

### Suggested List of Practical Uses of the Tucker

Tucking underwear of silk or cotton.
Lingerie frocks.
Children's dresses.
Baby bonnets.
Collar and cuff sets.
Tea aprons.
Shirt waist fronts.
Cross-tucked bands of lingerie and underwear.
Tucked medallions for underwear.
Pin tucks on ruffles for underwear.
Cross-tucked pillow tops.
Wide tucks for frocks.
Tucked bands for blouses and underwear.
Taffeta and crepe de chine dresses.

CHAPTER 6

# THE RUFFLER

## The Parts of the Ruffler and Their Uses

It is necessary to become familiar with the Ruffler before it can be used successfully. Select the Ruffler from the set of attachments and compare it with Fig. 112. Note the names and uses of the principal parts, as follows:

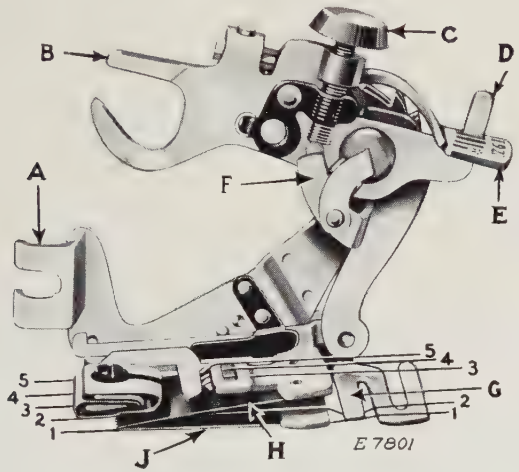



Fig. 112. The Ruffler and Its Parts

NOTE: If the Rufflers with your machines are not exactly like Fig. 112, you will find the working parts quite similar. Any difference in the adjustments will be found explained in the instruction book. The 66-1 Singer machine has an entirely different type of foot from other Singer models and it is well to compare the foot on the Ruffler with the presser foot before attempting to attach the Ruffler to the machine. See page 26.

**A—Foot**—the part by which the Ruffler is attached to the presser bar.

**B—Fork Arm**—the section that must be placed astride the needle clamp.

**C—Adjusting Screw**—the screw that regulates the fullness of the gather.

**D—Projection**—the part that projects through the slots in the adjusting lever.

**E—Adjusting lever**—the lever that sets the ruffler for gathering or for making a plait once at every six stitches or once at every twelve stitches, as desired; also for disengaging the ruffler, when either plaiting or gathering is not desired.

**F—Adjusting Finger**—the part which regulates the width of size of the plaits.

**G—Separator Guide**—the guide on the underside of the ruffler, containing slots into which the edge of the material is placed to keep the heading of the ruffle even; also for separating the material to be ruffled from the material to which the ruffle is to be attached.

**H—Ruffling Blade**—the upper blue steel blade with the teeth at the end to push the material in plaits up to the needle.

**J—Separator Blade**—the lower blue steel blade without teeth, which prevents the teeth of the ruffling blade coming into contact with the feed of the machine, or the material to which ruffle or plaiting is to be applied.

Lines 1, 2, 3, 4 and 5 (Fig. 112) indicate where the material is to be placed for various operations, as follows:

Line 1—the proper position for the material to which the ruffle is applied.

Line 2—the material to be gathered.

Line 3—the facing for the ruffle.

Line 4—the strip of piping material.

Line 5—the edge to be piped.

Refer to this illustration when inserting the material in the Ruffler.

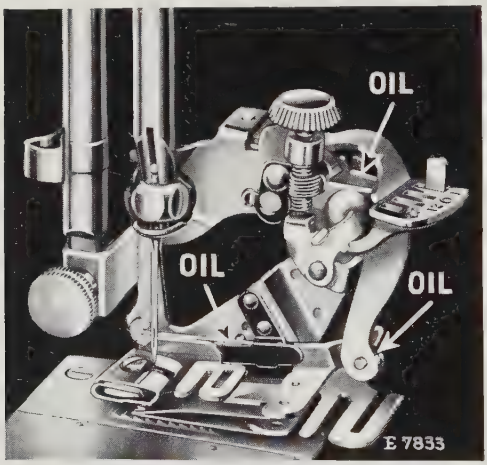



Fig. 113. Oiling Points on Ruffler

### Oiling the Ruffler

The Ruffler requires an occasional oiling of all working parts to prevent them from sticking. A drop of oil at each point indicated in Fig. 113 is sufficient. If possible, sew on a waste piece of material after oiling to prevent your garment from becoming soiled. If the Ruffler does not plait evenly a drop of oil may remedy the trouble.

### Attaching the Ruffler to the Machine

Raise the needle bar to the highest point and remove the presser foot. Attach the ruffler foot to the bar, at the same time placing the fork-arm astride the needle clamp. Turn the balance wheel slowly by hand to see that the needle comes down in the center of the needle hole.

### To Adjust Ruffler for Gathering

The adjusting finger (F, Fig. 114) is not intended for gathering and should be moved toward the operator or away from the needle, as shown in Fig. 114.

Raise the adjusting lever (E, Fig. 114) and move it to the left so that the projection (D, Fig. 114) will enter the slot marked "1" in the adjusting lever (E) when the lever is released. The ruffling blade will then move forward and back once at every stitch. Insert the material to be ruffled between the two blue blades, following the line 2 in Fig. 112. Draw the material slightly back of the needle, lower the presser bar and commence to sew.

To make fine gathering, shorten the stroke of the ruffling blade by turning the adjusting screw (C, Fig. 114) upward, also shorten the stitch. To make full gathering, lengthen the stroke of the ruffling blade by turning the adjusting screw (C) downward, also lengthen the stitch. By varying these adjustments, many pleasing varieties of work can be accomplished.

### Inserting the Material in the Ruffler and Making a Plain Gather

For ruffling or gathering, the adjusting finger should be released or turned toward the operator.

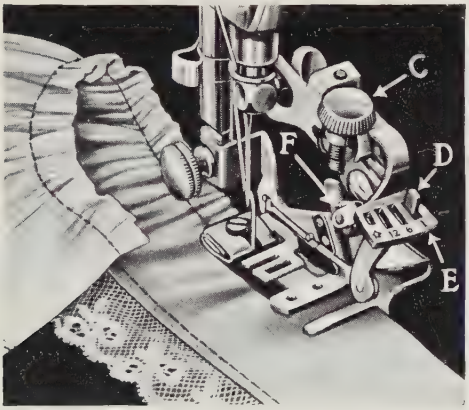



Fig. 114. Making a Plain Gather

Insert the material in the Ruffler between the two blue blades following line 2, Fig. 112. Pull the edge of the material to be gathered forward until it is slightly past the needle, lower the presser bar and sew. See Fig. 114. The fullness of the ruffle is determined by the position of the adjusting screw. To **decrease** the fullness turn the screw **up**. To **increase** the fullness turn the screw **down.**

The length of stitch also has its effect on the gathers. A short stitch will make a fine gather, while a coarse stitch will decrease the fullness and make the plaits larger.

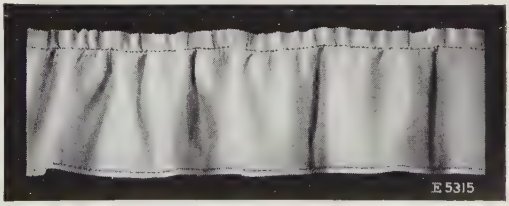



Fig. 115. A Plain Hemmed Ruffle

## How to Test the Ruffle for Fullness

It is often necessary to adjust the Ruffler for a certain fullness, but because the length of stitch affects the fullness as well as the position of the adjusting screw, it is impossible to have an indicator on the Ruffler to determine the amount of fullness that will be taken up. In addition, some materials take up more fullness than others with the same setting of the stitch and adjusting screw. It is therefore necessary to experiment with a small piece of the material to be ruffled if the correct amount is to be gathered. For example, if the fullness of a ruffle is to be one and a half, take a six-inch piece of material and gather it into a four-inch space.

## How to Slide the Gathers on the Thread

Another convenient way to gather to fit a given space is to loosen the upper tension on the machine. This will allow the gathers to slide on the thread to fit the desired space the same as in hand gathering.

When gathering in this way it is necessary to leave a long thread when taking the material from the machine so that the gathers may be adjusted as desired. It is also well to use a strong upper thread so that there will be no danger of breaking it when sliding the gathers.

## Making a Ruffle and Sewing It to the Garment at One Operation

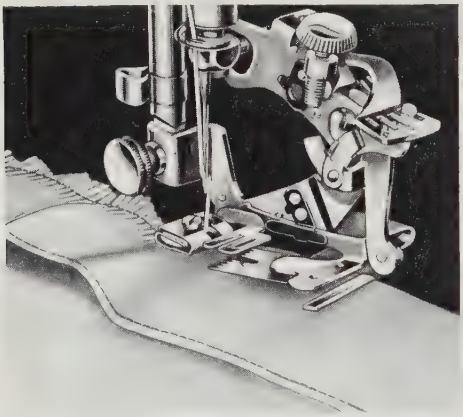


Fig. 116. Making a Ruffle and Sewing It to the Garment

After having tested and adjusted the Ruffler for fullness, place the material for the ruffle in the Ruffler between the two blue blades and insert the garment to which it is to be attached under the separator blade following line 1, Fig. 112. Proceed as for plain gathering, guiding the material lightly so that it will not feed away from the heading guide. See Fig. 116.

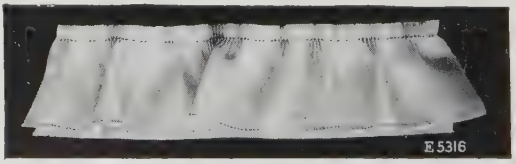



Fig. 117. Sample of Ruffle Made and Applied in One Operation.

### Finishing a Ruffle with a French Seam

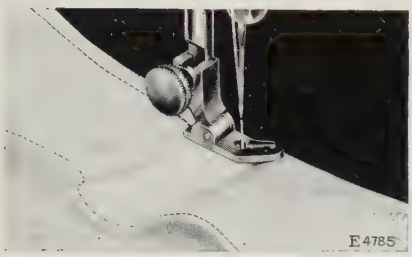



Fig. 118. Ruffle Finished with a French Seam

Place the garment and the material for the ruffle in the Ruffler as previously explained, with the wrong side of the material to be ruffled facing the wrong side of the garment. After sewing the ruffle to the garment in one operation, trim the seam close to the line of stitching and turn the seam to the wrong side of the garment. Stitch in position with the presser foot. See Fig. 118.

### A Facing May be Added at the Same Time the Ruffle is Made

First insert the material for the ruffle in the Ruffler between the two blades and the garment under the separator blade, as directed for sewing the ruffle to the garment in one operation. Place the material for the facing in the Ruffler, following line 3, Fig. 112. The facing may be straight or bias material. If the facing is to be on the wrong side, place the right sides of the garment and the ruffle together. See Fig. 119.

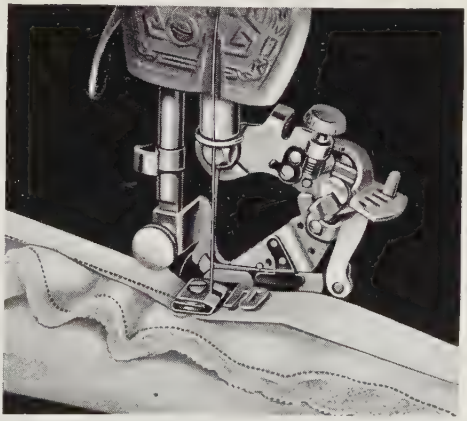


Fig. 119. Adding a Facing as the Ruffle is Made

### Finishing a Ruffled Seam with Binding

Make the ruffle and sew it to the garment in one operation, then trim the seam close to the edge. Remove the Ruffler and attach the Binder to the machine. Select a suitable material to use for binding the seam and insert it in the Binder. Place the edge of the ruffled seam in the Binder and bind as shown in Fig. 120.

The seam may be bound on the right side of the garment if desired and then stitched flat as shown in Fig. 121.

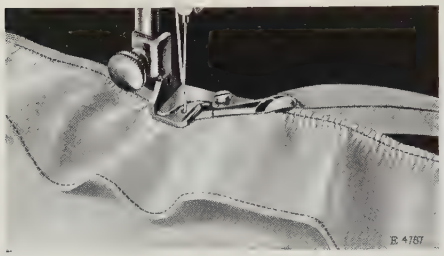



FIG. 120. FINISHING A RUFFLED SEAM WITH BINDING

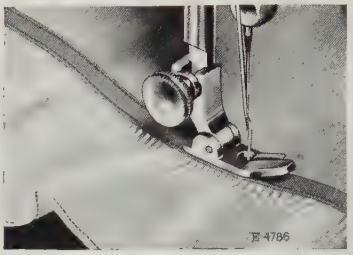
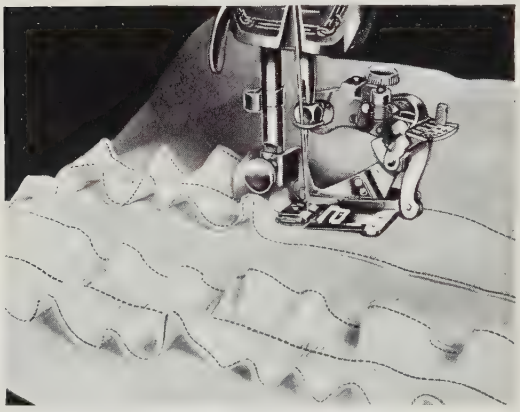



FIG. 121. BINDING A RUFFLED SEAM FLAT

## Applying Rows of Ruffles to a Garment



Rows of ruffles may be stitched to a garment at the same time the material is ruffled by placing the garment under the Ruffler and the material for the ruffle between the blades, as shown in Fig. 122. The position on the garment for the ruffles may be indicated by a basting thread or a chalk mark.

FIG. 122. APPLYING ROWS OF RUFFLES TO A GARMENT

The edges of the ruffles may be hemmed with the foot hemmer or picoted on a special power hemstitching machine. The addition of a narrow lace edge is often attractive.

### Tuck Shirring

Tuck shirring is made by folding a tuck in the material and inserting the folded edge in the Ruffler as for ordinary gathering. Insert the edge of the fold in the guide to keep the heading of uniform width. See Fig. 123.

The heading of the ruffle is the width of the material from the guide edge to the stitching. When using the heading guide in the separa-

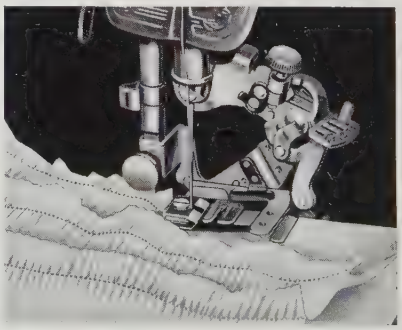


FIG. 123. TUCK SHIRRING

tor plate this amount is approximately one-quarter of an inch. If a narrower or wider heading is desired the material must be carefully guided by hand without using the slot in the heading guide.

It is well to fold and baste the material before starting to shirr. This trimming is attractive on soft materials such as net or chiffon. A strip of paper under the Ruffler will insure perfect work on soft materials.

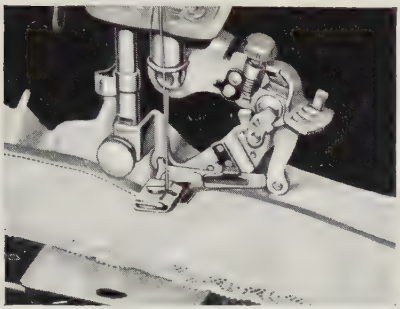


Fig. 124. Piping a Ruffle and Applying it to a Garment

### Piping a Ruffle

It is only possible to pipe a ruffle one and one-quarter inches in width or narrower without using the shirring plate. The material for the ruffle is placed in the Ruffler between the two blades and carried through with the finished edge of the ruffle to the right of the attachment. See Fig. 124. The edge to be ruffled is inserted in the guide from the right side to keep the heading even.

The material for piping must measure about one-quarter of an inch wide when folded in the center and is usually cut on the bias. The piping must be placed in the Ruffler following line 4, Fig. 112, with the folded edge of the piping to the right. The material to be piped should be folded on the edge and inserted in the Ruffler following line 5, Fig. 112.

Folded piping may be purchased in a variety of attractive colors.

### Puffed Ribbon

Puffed ribbon makes a most attractive trimming and may be of one-inch ribbon or wider. Adjust the Ruffler for the desired fullness and insert the edge of the ribbon in the Ruffler as for plain gathering. After gathering one edge, place the other edge in the Ruffler and gather in the same manner. A loose upper tension may be used to allow the pulling up of the ribbon to the desired length. See Fig. 125.

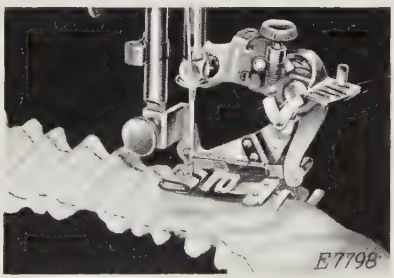



Fig. 125. Making Puffed Ribbon

Puffed ribbon makes very attractive trimming for couch pillows.

## Adjusting the Ruffler for Plaiting

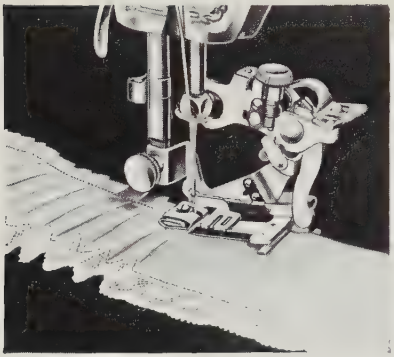


Fig. 126. The Ruffler Adjusted for Plaiting

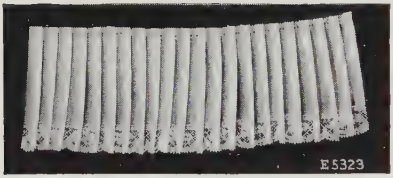



Fig. 127. Sample of Plaited Organdie with Lace Edge

For plaiting, the adjusting finger should be set into position under adjusting screw. The projection should be placed in the slot marked 6 or the slot marked 12 in the adjusting lever. The adjusting screw on the Ruffler must be turned down as far as it will go when plaiting. To make the plaits farther apart, **lengthen** the stitch on the sewing machine. To make them closer together, **shorten** the stitch.

### Materials that May be Plaited with the Ruffler

Any material with dressing, such as lawn, organdie or taffeta, may be successfully plaited with the Ruffler. Softer materials may be plaited but the plaits will not lie flat unless they are very well pressed. In the case of georgette or soft net it is impossible to press the plaits by hand so that they will stay in position. Materials for plaitings should be finished on one edge with a narrow hem or by picoting on a special power hemstitching machine.

### Plaiting and Sewing to the Garment in One Operation

Plaiting may be made and sewn to the garment in the same manner as ordinary ruffling. The garment is placed under the blades and the material to be plaited between the two blades. See Fig. 128.

Attractive plaited trimmings for organdie dresses may be applied in the same manner as rows of ruffles. See Fig. 122.

It is necessary to test out a small strip of the material to be

plaited before applying it to a garment at one operation, to determine how many yards of plaiting material will be required for the garment.

If you find after testing out the material that more is required than you had estimated, the machine may then be set for a longer stitch. This will increase the space between the plaits and fewer plaits will be required for the trimming.

Each plait should be pressed flat with the finger as it is made. It will be necessary to run the machine very slowly when doing this, but with a little practice it is quite easily done. The plaits should be pressed in with a warm iron after taking the work from the machine.

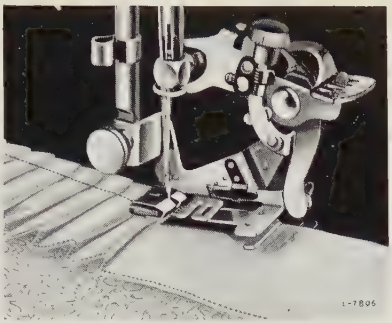


Fig. 128. Plaiting and Sewing to the Garment in One Operation

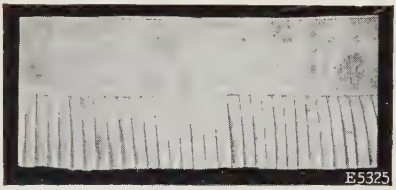


Fig. 129. Sample of Plaiting and Sewing to Garment in One Operation

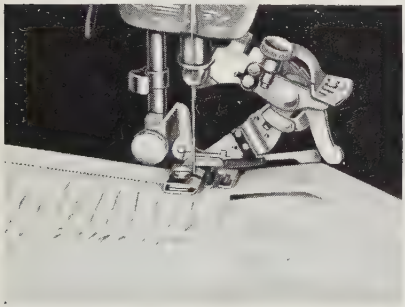


Fig. 130. Plaiting, Sewing to Garment and Adding Facing in One Operation

## Facing the Plaited Ruffle

A facing may be added at the same time the ruffle is made and attached to the garment by placing the material for the facing in the Ruffler following line 3, Fig. 112. When a facing is applied in this manner the surplus material is trimmed from the heading of the ruffle, the edge of the facing is turned under and stitched flat to the garment. Fig. 130 shows how to sew the facing in position.

## Plaited Lace or Ribbon

Ribbon and lace that has a little dressing can be plaited successfully with the Ruffler, if one inch or more in width. When plaiting lace, however, it is necessary to place a strip of paper under the Ruffler. See Fig. 131 and note especially the paper under the Ruffler. Ribbon is plaited in the same manner, but paper is not required unless the ribbon is very soft.

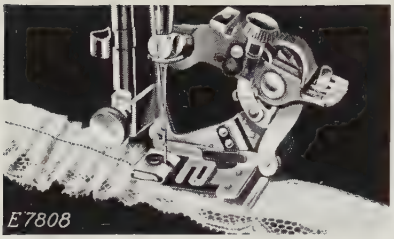



Fig. 131. Plaiting Lace with Paper

It is advisable to use lace with a fine mesh for plaiting because coarse lace may catch in the ruffling blade.

Very attractive trimmings for lingerie and fancy articles may be made of plaited lace. Rosettes of lace or ribbon are used for decoration on many garments.

## Rosettes of Plaiting

Rosettes of plaited ribbon or silk for trimming dresses or fancy articles for use in the home are very easily and quickly made with the Ruffler. Ribbon of ¾″ or more in width, and with sufficient body to hold a plait, may be plaited with the Ruffler. The plaiting is then sewn to a circle of crinoline, using the presser foot. See Fig. 132.

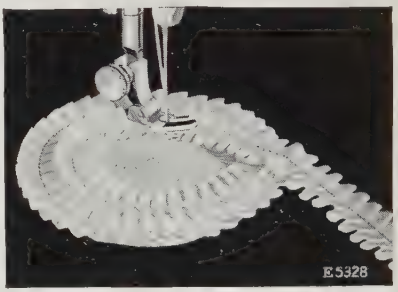



Fig. 132. Making Rosettes

## Plaited Bands for Trimming

Bands of plaiting may be made with the Ruffler by first plaiting a strip of material, then pressing the plaits flat with a warm iron and sewing them in position with the presser foot, as shown in Fig. 133.

Fig. 133. Sewing Plaits Flat with the Presser Foot

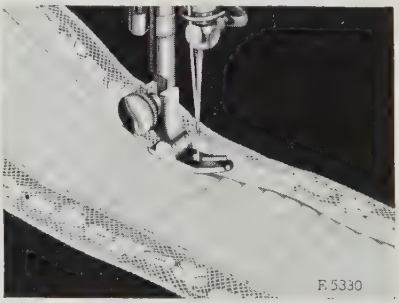



Fig. 134. Applying Insertion to the Plaited Band

If lace insertion is to be applied to the edge of the plaited band, it should be stitched to the right side, the surplus material turned to the wrong side of the band and a second row of stitching added to keep it in place. See Fig. 134.

### To Adjust the Ruffler for Group Plaiting and Gathering

The Ruffler can be adjusted for group plaiting by lifting the adjusting lever, E, Fig. 135, and moving it to the right so that the top of the projection, D, rests on the small slot indicated by the star on the adjusting lever. This should be done at the points where you wish to make the space between the plaits.

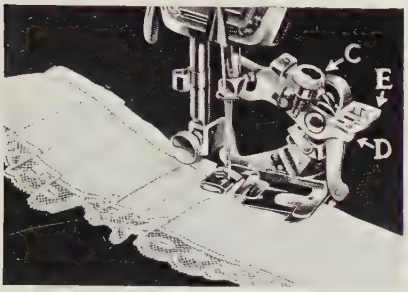



Fig. 135. Group Plaiting

When the desired space has been made, adjust the lever, E, so that the projection, D, enters either the slot marked "6" or the slot marked "12". By alternately making groups of plaits and plain spaces, as shown in Fig. 135, very attractive work can be produced.

The Ruffler will then stop and plain stitching will be made.

Fig. 136. Sample of Group Plaiting Sewn to a Band

## Suggested List of Garments that May Be Trimmed with Ruffling or Plaiting

Lingerie.

Petticoats and bloomers for children.

Frocks of cotton or silk.

Puffing for taffeta dresses.

House dresses.

Shirt waists.

Tea aprons.

Collar and cuff sets.

Plaiting or ruffling for overskirts and flounces.

Plaiting or ruffling for ends of sash.

Plaited ribbon for hats.

Puffing for baby bonnets.

Ruffles for boudoir pillows.

Puffing for sofa pillows.

Fancy lamp shades.

Puffing or plaiting for children's hats.

CHAPTER 7

# SPECIAL LABOR-SAVING ATTACHMENTS FOR SEWING MACHINES

The sewing machine that is equipped with all available attachments allows the making of trimmings that are in vogue from season to season and thus does not limit the home sewer in her choice of decoration for her garments.

The time required to apply many trimmings by hand, such as braiding and shirring, is greatly shortened by using the attachments. With an underbraider, an entire garment may be braided in a few hours. Another good example is the buttonhole attachment, with which a buttonhole may be made in a few seconds.

In addition to the time and labor involved in applying trimmings by hand, the result is often discouraging when the garment is completed, for unless one is an expert with the needle the garment will carry the home-made look so undesirable to the average woman. Work done with the attachments has that tailored finish found on the better ready-made garments.

On the following pages are described the most commonly used special attachments, a complete list being given on page 127.

## DARNING ON THE SEWING MACHINE

One of the most tedious and time-consuming household tasks is darning. This may be done easily and quickly on the sewing machine, without eye strain. The finished darn is neater than when done by hand and stronger than the original fabric. Best results are obtained when using a Feed Cover Plate to permit moving the work in any direction, a Stripper Foot to prevent the work from rising with the needle and a frame in which the material to be darned is stretched and held.

### Preparing the Machine for Darning

First, remove the presser foot and the screw which fastens it to the presser bar. To attach Stripper Foot No. 86294 to the machine it is necessary to remove the needle clamp. This foot has a needle clamp of its own which is used in place of the regular clamp.

Fig. 137. Stripper Foot and Feed Cover Plate

Place the needle through the hole in the Stripper Foot and up through the needle clamp before attaching the clamp to the bar. The flat side of the needle should be turned toward the needle bar as usual before tightening the clamp.

The Feed Cover Plate should also be used with the Stripper Foot for darning. Pull out the slide far enough to slip the Feed Cover Plate over the throat plate, insert the projection to the right of the needle hole into the corresponding hole in the throat plate and push the slide into position. On the 127 machine the Feed Cover Plate is fastened with a screw.

Turn the balance wheel over by hand, and be sure the needle comes down through the center of the needle hole. See Fig. 137 for Stripper Foot and Feed Cover Plate attached.

When threading the machine for darning, care should be taken to thread through the hole in the slack thread regulator on the 66 and its companion machine, the 99 portable electric. See Fig. 138. All other models are threaded in the regular way. The thread should also be passed through the hole in the Stripper Foot. See A, Fig. 137.

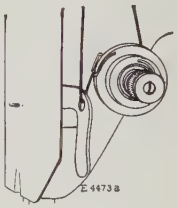



Fig. 138 Threading for Darning on 66 and 99 Machines

The presser bar must be lowered to bring the tension into operation. This should not be done, however, until the material to be darned has been inserted in the frame and placed under the needle as directed in the next paragraph.

### Preparing Flat Material for Darning

Place the material to be darned between embroidery hoops, or in Singer Darner No. 36088. In either case the material must be stretched tightly over the frame. If necessary, wind the embroidery hoops with muslin to make them fit tightly.

### Darning Table Linen and Towels

Cut away the frayed material around the edges of the hole to be darned. Place the material in the darner frame, hold it in an upright position back of the arm, bring it down under the needle and lower the presser bar.

Turn the balance wheel slowly by hand, hold the upper thread and pull up the under thread. Then hold both threads and take several stitches. See Fig. 146. After the threads have been safely locked, cut away the loose ends of the thread. This will prevent them from being darned into the material. The same procedure must be followed when darning any material.

Fig. 139. Beginning a Darn on Table Linen

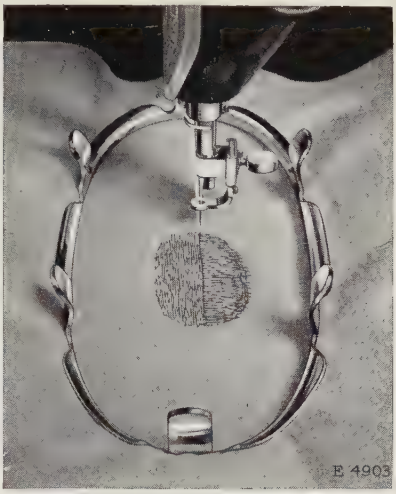



Fig. 140. Completing a Darn on Toweling

As the feed of the machine has been covered, it is necessary to do the feeding by holding the frame with both hands and moving it in time with needle. Outline the edge to be darned with three rows of stitching about one-eighth of an inch from the edge. This will give you a line to follow when darning and will make the darn stronger. See Fig. 139. If the stitches are loose on the underside, either the presser bar is not down or the tensions are not properly adjusted.

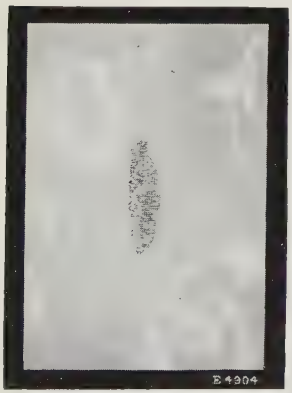



Fig. 141. Finished Darn on Table Linen

As the texture around a worn spot on table linen or towels is usually thin because of wear, it is advisable to use fine mercerized cotton

Fig. 142. Finished Darn on Toweling

for the darn. If the thread is too heavy, the material will tear away from the darn. The size of the needle should correspond with the thread used.

After the hole has been outlined, start at one end and sew back and forth across the hole, keeping the lines of stitching an even distance apart and carrying them up to the outline stitches around the edge. See Fig. 139.

After the stitching has been completed in one direction, turn the hoop around and sew crosswise. See Fig. 140. Then darn should match as nearly as possible the texture of the material. If the material is sheer, weave a loose darn by moving the hoop far enough to make a long stitch. If a firm darn is required, move the hoop a short distance and shorter stitches will be made. See Figs. 141 and 142 for finished darns on table linen and toweling.

## To Darn Stockings with the Machine

Fig. 143. Locating the Darner on the Stocking

Fig. 144. Applying the Darner Spring

Singer Stocking Darner, No. 35776, is very practical to use for stockings, as it has been made the correct size to fit the heel or toe of a stocking.

To put the stocking on the frame, first remove the spiral spring from the frame and push the six arms all the way back toward the inside of the frame. Then run the hand inside the stocking to the place where the darn is to be made. Put the frame over the hole as shown in Fig. 143, grasp the frame with the hand inside the stocking and turn the stocking leg inside out. Attach the spring as shown in Fig. 144, taking care that it is pushed firmly into the groove of the frame.

Fig. 145. Stocking Ready to Darn

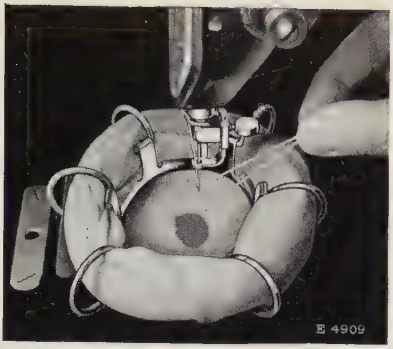



Fig. 146. Preparing to Darn

Roll the stocking neatly, starting at the top and continuing to the darner frame.

Turn the hinged arms over the rolled stocking to hold it in position while darning. See Fig. 145. For more detailed directions see Form 7845, Instructions for Using the Singer Stocking Darner.

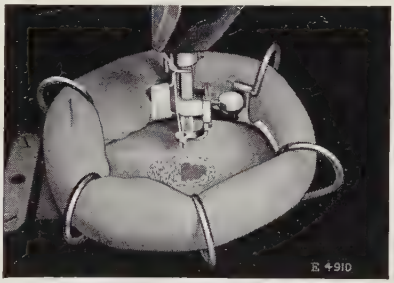



Fig. 147. Partly Finished Darn

The hole should be neatly trimmed so that a ragged edge will not be left after the darn is finished. Place the darner on the machine and sew, following directions for making a darn on linen. See Fig. 146 for pulling up the under thread, Fig. 147 for a darn in process and Fig. 148 for a finished darn.

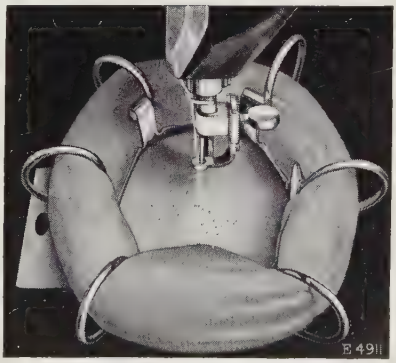



Fig. 148. Completed Darn

Stockings should be darned with Singer darning cotton. This cotton will make a soft, comfortable darn that will outwear the rest of the stocking. It takes very little practice to darn successfully.

## THE SHIRRING PLATE

### The Purpose of the Shirring Plate

In Chapter 6 you were shown how tuck shirring could be done with the regular ruffler, but when rows of flat shirring at a distance from the edge of the material are to be made with the ruffler the separator plate on the ruffler is removed and the Shirring Plate must be used.

### To Attach the Shirring Plate to the Machine

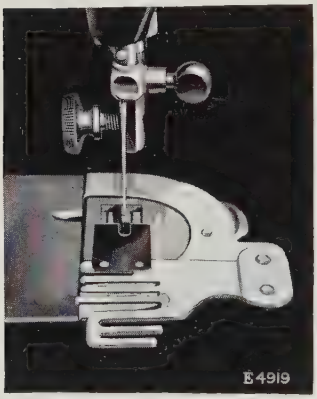



FIG. 149. THE SHIRRING PLATE IN POSITION

Attach the Shirring Plate to the machine by pulling the slide out sufficiently to allow the prongs on the Shirring Plate to fit under the throat plate. When the Shirrer is in the right position, the stud at the right side will fit into the hole in the throat plate. Close the slide and the Shirrer will be safely held in position. See Fig. 149.

The Shirring Plate is attached to all family machines in this manner with the exception of the No. 127, where the Shirring Plate must be placed around the throat plate and held in position with the slides.

### To Prepare the Ruffler for Shirring

Remove the separator blade from the ruffler by loosening the screw at the right side of the attachment sufficiently to release the separator plate to which the under blade is attached. Do not remove this screw but loosen it only enough to release the separator.

Attach the ruffler to the machine in the usual manner and you will note that it is now possible to insert a wide piece of material under the ruffler from either side.

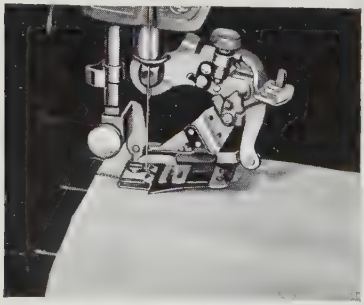


FIG. 150. MATERIAL READY FOR SHIRRING

### Preparing the Material for Shirring

Fold the material where the rows of shirring are desired and press with a warm iron. It will then be possible to follow each crease with the needle to keep the rows of shirring straight. See Fig. 150.

## The Ruffler and Shirrer in Operation

Insert the material to be shirred between the ruffler and the Shirring Plate, lower the presser bar and sew. See Fig. 151. It is advisable to test the ruffler on a small piece of the same material that you desire to shirr in order to make the proper adjustment of the ruffler and the stitch for fullness. Shirring may be done with a loose upper tension if you desire to slide the gathers on the thread to fit a certain space.

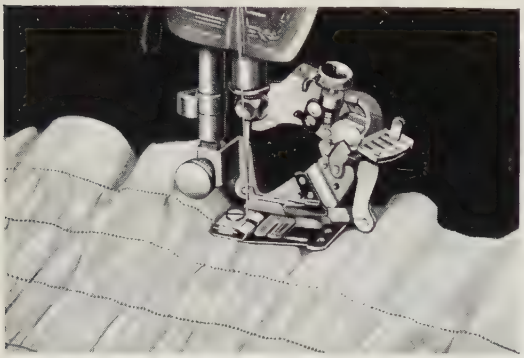


Fig. 151. Shirring with the Ruffler and Shirring Plate

## Box Plaiting with the Ruffler

For box plaiting the Shirring Plate is attached to bed of machine as shown in Fig. 149. The separator blade is removed from ruffler as for shirring. The ruffler is attached to machine in the usual manner.

The adjusting finger of the ruffler is moved forward, into position, under the adjusting screw and the adjusting screw turned down as far as it will go. The adjusting lever is gently placed over projection at slot marked "12" and the stitch regulator is set for a very long stitch.

The material is first inserted into the ruffler from the right side, (under the arm of machine) with edge in heading guide of Shirring Plate and between the two blue blades. Proceed the same as for regular plaiting. Through this operation, deep, widely separated plaits will be accomplished.

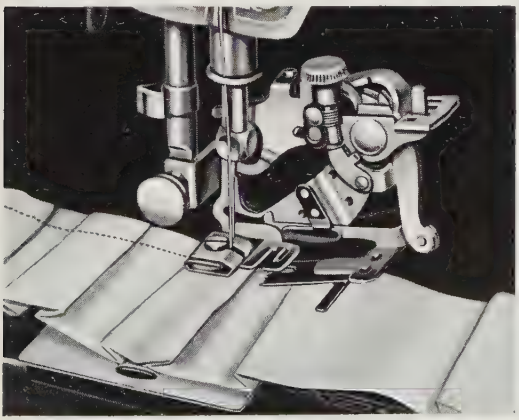


Fig. 152. Ruffler with Sample of Box Plaiting

The Shirring Plate is removed from the machine, the the separator blade restored to the ruffler and the stitch regulator set for a shorter stitch. The material is now reversed; the edge being inserted at the left side of ruffler under the first guide of separator blade and between the two blue blades.

Fig. 153. Finished Sample

The first stitch must be taken immediately at the fold of first plait, so that the reversed plait may be formed just alongside the next fold, thus forming a box plait.

When first attempting this operation, it is well to go slowly and count the stitches, testing on a short piece of material until the correct length of stitch adjustment is attained.

Attractive trimmings may be made with box plaiting. It is very effective for collar and cuffs, children's clothes, curtains, pillows, etc.

The Shirring Plate is not a part of the regular set of attachments, but is sold as an extra attachment.

## SHIRRING WITH THE GATHERING FOOT

This attachment is fastened to the machine in the same manner as the presser foot. Material placed under the foot and stitched in the usual way will be slightly gathered. The length of stitch on the machine regulates the fullness of the gathers. A longer stitch will increase the fullness, while a shorter stitch will decrease it.

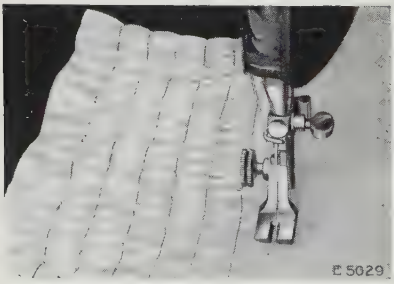



Fig. 154. The Gathering Foot in Operation

With this foot it is possible to shirr in narrow rows as shown in Fig. 154. The material may be guided as easily as when sewing with the presser foot. Fine materials, such as batiste, silk or net, may be very attractively shirred. Where only a slight fullness is required, as at the top of a sleeve or around the neck, this attachment is very convenient.

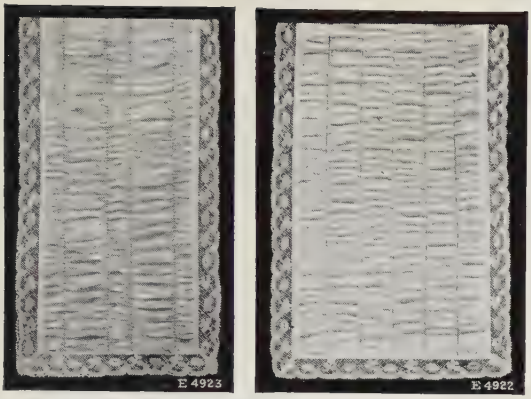



FIG. 155. SAMPLES OF SHIRRING

Embroidery silk may be used in the bobbin and a very ornamental stitch will be visible along the rows of shirring.

Shirring is used on children's clothing, on lingerie dresses and on underwear. Fancy hand-sewing stitches are sometimes used over the rows of shirring.

## THE QUILTER

The Quilter is attached to the machine in place of the regular presser foot. See Fig. 156. The bar with the indicator at the right end is adjustable by pushing it to the right or to the left as desired. See A, Fig. 156. The indicator is used to guide each row of sewing by the previous row stitched.

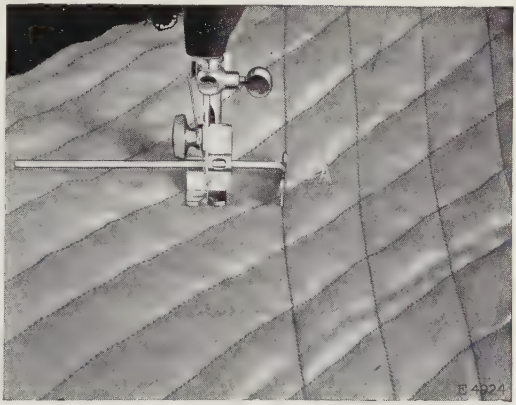



FIG. 156. THE QUILTER IN OPERATION

The name Quilter should not be understood to indicate that this foot is used only for quilting as it may be put to many other uses. When applying rows of ornamental stitching on a garment the Quilter is of great assistance.

When following a design or pattern, the bar may be removed. See Fig. 165, page 109.

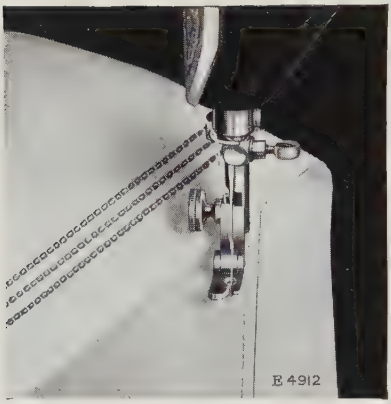



FIG. 157. ORNAMENTAL STITCHING WITH THE PRESSER FOOT

Very attractive decorations may be made by winding the bobbin with heavy embroidery silk and using plain sewing silk in the needle. The under tension is entirely released. The silk should pull perfectly free from the bobbin. The stitching is then done as for plain sewing, with the right side of the material down. If desired, a silk of contrasting color may be used on top to show between the stitches. See Fig. 157. Thread the machine in the usual way and pull up the under thread before starting to stitch. The length of stitch will vary the effect of this trimming and the upper tension may also be loosened slightly to make the stitches stand up and appear loose. About ten stitches to the inch makes an attractive decoration for woolen material. See Fig. 158 for a finished sample of ornamental stitching applied in this manner.

FIG. 158. STRAIGHT ORNAMENTAL STITCHING

A novel trimming may be made by stamping a design on the wrong side of the garment and following the line with the needle. If the design is small, it may be necessary to run the machine slowly and to raise the bar occasionally to adjust the material properly at the curves. When the design is finished, the end of the silk may be threaded into a hand sewing needle and pulled through to the under side for fastening. See Fig. 159 for a finished design stitched with heavy silk.

This stitching will add smartness to a tailored dress. Considering the amount of trimming that can be made from a spool of silk, the expense is very small.

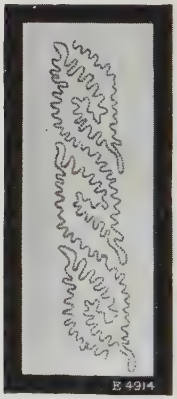



FIG. 159. DESIGN IN ORNAMENTAL STITCHING

## THE UNDERBRAIDER

The quilter is also used in connection with the Underbraider. When using it with the braider, the indicator bar is taken from the foot by pulling it to the right until it is released from the clamp, except when applying braid in straight rows, when the bar may remain in position and serve as a guide.

The Underbraider is used in sewing braid to the material by stitching through the center of the braid. Braiding is an attractive trimming for woolen or silk dresses and is applied easily and perfectly with the Underbraider. As no basting is required, a dress may often be braided within an hour or two.

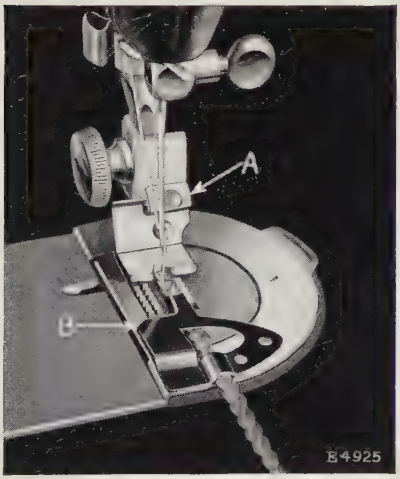



Fig. 160. Underbraider Ready for Use

### Attaching the Underbraider to the Machine

Attach the foot of the quilter to the machine after removing the indicator guide. See A, Fig. 160. You will note that the foot is cut away in front considerably more than the regular presser foot to enable you to follow the design and to permit the braid to cross over with the proper freedom.

The Underbraider is attached to the machine in the same manner as directed for the shirring plate on page 102 of this chapter. See Fig. 160.

### Kinds of Braid to Use with the Underbraider

Any braid that will fit in the Underbraider tube and that may be stitched through the center may be used in the Underbraider. The most popular braids that may be used successfully with the Underbraider are cotton or silk soutache and pig tail braid.

After the Underbraider is attached to the machine, slightly raise the blue spring at B, Fig. 160, and insert the braid under the spring until it is in position shown. It is sometimes necessary to force the braid under the spring by pulling it or to lift the spring with the screw driver. The braid should be well under the foot before starting to sew.

## How to Perforate Braiding Designs

Fig. 161. Perforating Braiding Designs

Braiding designs may be copied with the sewing machine by taking several thicknesses of paper and pinning the design you desire to copy to the paper as shown in Fig. 161.

Attach the foot of the quilter to the machine and, without threading the machine, follow the design with the needle. You will be able to make several copies of the design in this way. The perforated pattern is then pinned to the material to be braided and torn away when the braiding is finished.

## How to Braid

The design to be braided must be applied to the wrong side of the garment.

Before starting to braid, test the Braider on a waste piece of material to make sure the stitching is directly in the center of the braid; if not, the end of the braider tube may be forced in the proper direction by pushing it slightly with the end of the screw driver. This adjustment should be carefully made before starting to braid a garment.

Fig. 162. Applying Braid

A braiding design should always be started at a point where it is convenient to pull the braid through to the under side. A good starting point is usually at an inside point or at the end of a scroll, but this can be determined best from the design you wish to braid.

The braid should always pull freely from the roll, and requires no guiding except to see that it does not turn over as it feeds into the braider tube.

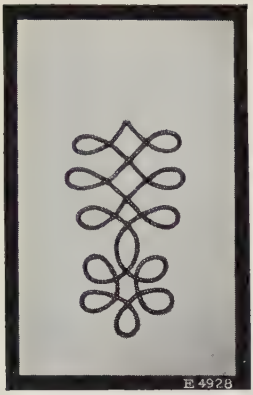



Fig. 163. A Braided Design

When braiding a small curve it is often necessary to run the machine slowly to follow the design.

When braiding a square corner, sew until the corner is reached, then stop the machine with the needle in the braid, raise the presser bar and turn the material, using the needle as a pivot. Lower the presser bar and proceed to sew.

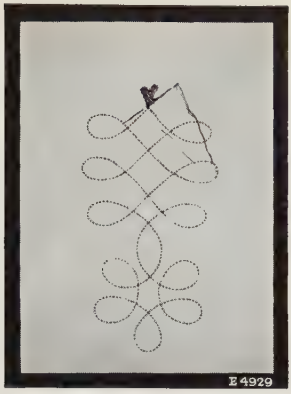



Fig. 164. Fastening Ends of Braid

For most braiding, a medium length of stitch should be used, but when braiding small curves it is sometimes necessary to use a shorter stitch in order to follow the curves. See Figs. 162 and 163 for braiding with soutache braid.

### How to Fasten the Ends of Braid

When you have finished braiding, make a small hole with a stiletto or the sharp end of the scissors at each end of the design and pull the ends of braid through to the underside of the material. Fasten the ends with a hand sewing needle as shown in Fig. 164.

### To Braid on Net or Fine Material

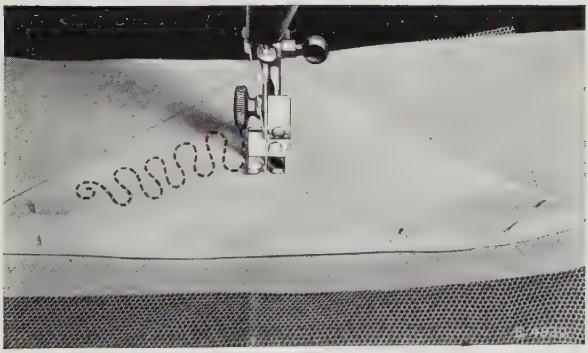


Fig. 165. Using Paper to Braid on Net

To braid on net or fine material it is necessary to have the design stamped on paper and, if the material is difficult to stitch when using a single thickness, it is well to slip a piece of paper underthequilter foot also.

This method of braiding is illustrated in Fig. 165.

## THE EDGE-STITCHER

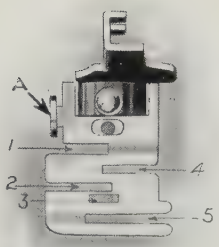



FIG. 166
THE EDGE STITCHER

The Edge-Stitcher is a very useful attachment and is available for all family machines described in this book. It is attached to the machine in place of the presser foot. The slots, which are numbered from 1 to 5 (Fig. 166) serve as guides for sewing together laces, insertions, embroideries, sewing in position hemmed or folded edges, piping or sewing flat braid to a garment. It is difficult for many women to stitch straight with the regular presser foot and the Edge-Stitcher will solve the problem.

### Attaching the Edge-Stitcher to the Machine

Raise the needle bar to the highest point, remove the presser foot and attach the Edge-Stitcher in its place. Turn the balance wheel over slowly by hand to see that the needle goes through the center of the needle hole. For practice in adjusting the Edge-Stitcher, place a folded edge of material in slot 1 and proceed to stitch. Push the adjusting lug A, Fig. 166, as far as it will go to the right and note the result, then pull to the left and note that the stitching is now closer to the edge. If the attachment is hard to adjust, place a drop of oil at the blue spring and as it works under it will correct the difficulty.

### Sewing Lace Together with the Edge-Stitcher

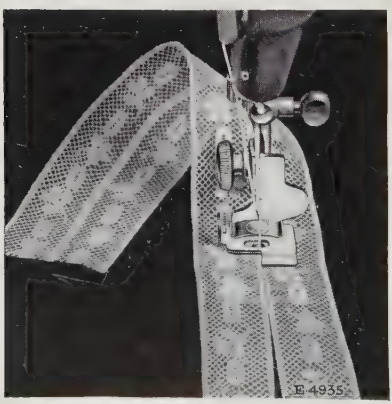



FIG. 167. SEWING LACE TOGETHER

When adjusting the Edge-Stitcher to sew two lace edges together, it is necessary to place one edge of the lace in slot 1 (Fig. 166) and adjust to sew close to the edge. Place the second piece of lace in slot 4 and as the lace feeds through the attachment, hold the edges slightly over-lapped. This will prevent the lace from feeding away from the guides.

The tension on the machine must be properly adjusted so that the lace will not be puckered. If the edges of the lace are not caught together, adjust lug A, Fig. 166, slightly in the proper direction.

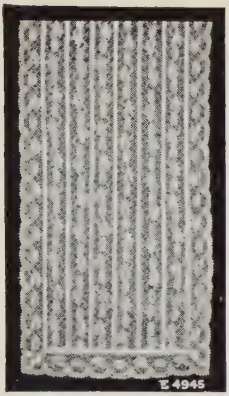



Fig. 168. Sample of Lace Joining with Edge-Stitcher

As it is difficult to sew two lace edges together even after basting, the Edge-Stitcher proves a most valuable time saver for such operations. Fig. 167 shows the Edge-Stitcher in operation and Fig. 168 an attractive sample of lace joining.

Lace and ribbon may be sewn together in the same manner, making dainty trimming for underwear. See Fig. 169.

Fig. 169. Lace and Material Joined

## Setting in Lace Insertion

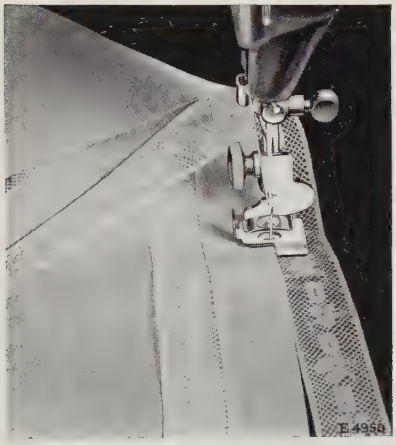



Fig. 170. Setting in Lace Insertion

When making underwear and lingerie dresses, lace insertion is sometimes set in the material for trimming. There is always a problem of how to finish the edge of the material without making a hem. The Edge-Stitcher may be used for this operation by folding the material on the edge to which the insertion is to be attached, placing the insertion in slot 4 and the folded edge in slot 1, Fig. 166.

The surplus material is then cut away close to the stitching as shown in Fig. 170. The edge of the material will not pull out as it has been stitched through a double thickness. Fig. 169 shows a finished sample of this type of work.

## Piping with the Edge-Stitcher

Piping, as a trimming for children's clothes and house dresses, is very attractive if the correct contrasting color is chosen for the piping material. Place the piping in slot 3 (Fig. 166) with the finished edge of the piping to the left and the edge to be piped in slot 4, as shown in Fig. 171. It is advisable to cut the piping bias and this may be quickly done with the bias cutting gauge.

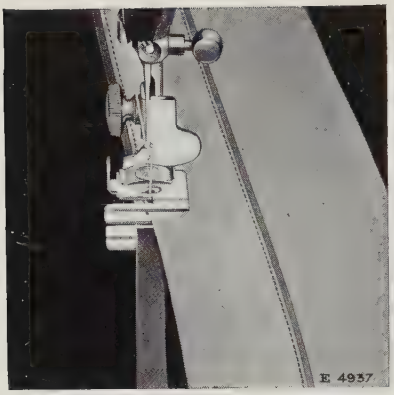



FIG. 171. PIPING WITH THE EDGE-STITCHER

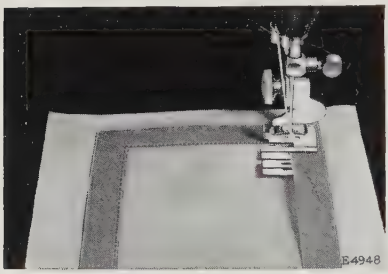



FIG. 172. APPLYING BIAS FOLDS WITH THE EDGE-STITCHER

Set the spring between B and C and the piping will be the correct width to fit the piping slot in the Edge-Stitcher after it has been folded in the center.

### Applying Bias Folds with the Edge-Stitcher

Folded tape, which may be purchased in a variety of colors and materials, may be applied to a garment with the Edge-Stitcher by placing the tape in slot 4 and the garment to which the trimming is to be applied flat under the attachment. See Fig. 172. When turning a square corner, sew until the turning point is reached, take the tape from the attachment, miter the corner by hand and place the edge in position in the attachment as illustrated. This folded tape may be purchased in a variety of widths and may be chosen to suit the type of garment to be made.

### Military Braid Applied with the Edge-Stitcher

Military braid makes a neat tailored trimming for a serge or other woolen dress and may be applied without basting by using the Edge-Stitcher. The line of trimming may be indicated by a chalk mark or basting thread. Trimming applied with the Edge-Stitcher will give a garment the tailored finish so desirable for a garment made at home.

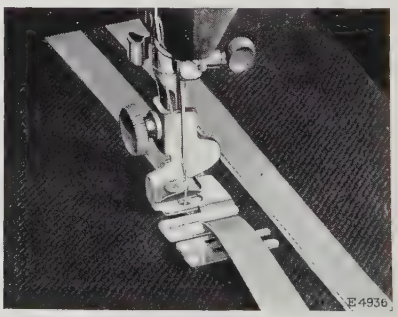



FIG. 173. APPLYING MILITARY BRAID

The braid is inserted in slot 4, Fig. 166, and the attachment is adjusted to sew close to the edge of the braid. The garment is then placed under the attachment. See Fig. 173, showing Edge-Stitcher in operation sewing on military braid.

## Making a French Seam with the Edge-Stitcher

The Edge-Stitcher may be used when making French seams to keep the seam of uniform width. Make the first stitching of the seam on the right of the garment, using the presser foot, trim the edge close to the stitching and fold to the wrong side of the garment. Place the folded edge in slot 4 of the Edge-Stitcher (Fig. 166) and adjust to make the width of seam desired.

Fig. 174. The Edge-Stitcher Making a French Seam

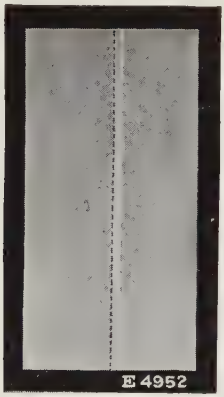



Fig. 175
A French Seam

As the appearance of a garment is often spoiled by poorly stitched seams, this attachment will prove most valuable. See Fig. 174, showing the Edge-Stitcher in operation making a French seam, and Fig. 175, a finished seam.

## The Edge-Stitcher Making a Wide Hem

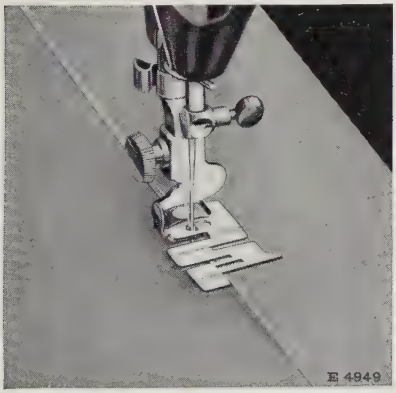



Fig. 176. Making a Wide Hem

A wide hem may be stitched in position with the Edge-Stitcher after the hem has been measured and the edge turned. The edge of the hem is inserted in slot 5 of the attachment, Fig. 166. Adjustment is then made to bring the stitching close to the edge of the hem. This method of hemming may be used for hems with a straight edge such as sheets, pillow slips, etc. See Fig. 176, showing Edge-Stitcher in operation making a wide hem.

## THE HEMSTITCHING ATTACHMENT

The Hemstitching Attachment may be used only to hemstitch two pieces of material together, but if a garment is properly planned, the hemstitching attachment can be used to make a very attractive finish.

### Operating the Hemstitching Attachment

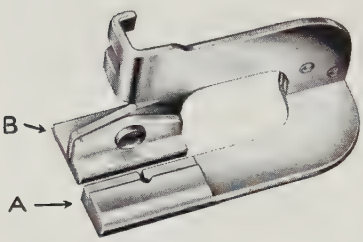



FIG. 177. THE HEMSTITCHER

To attach the Hemstitching Attachment (Fig. 177) to the machine, first raise the needle to the highest point, remove the presser foot and also the screw which holds the presser foot to the bar.

Place the attachment on the bar in the same position as the presser foot and fasten with the attachment screw. See Fig. 178. Place one piece of material directly under the attachment and the second piece between parts A and B, Fig. 177. The length of stitch on the machine will make the distance between threads fine or coarse as desired.

The tension can be regulated to make the opening wide or narrow. If a wide opening is desired, loosen the upper tension. The edges of the material must be carefully guided to insure a straight line of hemstitching.

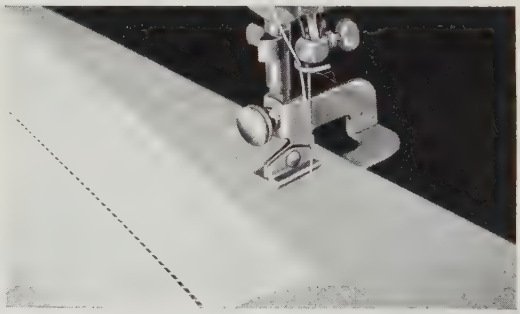


FIG. 178. HEMSTITCHER IN OPERATION

When the Hemstitching Attachment completes its work, the two pieces of material will be fastened together with a loose stitch which will appear as shown directly in back of the needle in Fig. 178. Upon opening the material, the threads will appear as shown at the left of the attachment.

Hemstitching in this condition seems almost useless until you devise a way to finish the seams to keep the threads in position. First open the hemstitching and stitch with the presser foot, using a perfect tension, close to the line of opening on both sides. This will keep the edges from working together.

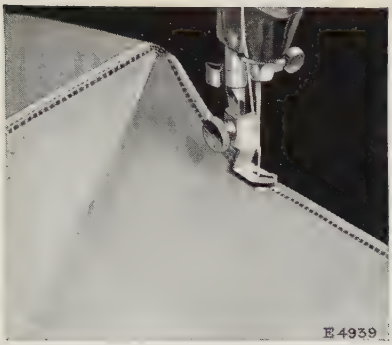



FIG. 179. FINISHING THE HEMSTITCHING WITH A FRENCH SEAM

### To Finish the Hemstitching with a French Seam

After the first stitch has been made, trim the surplus material as close to the seam as you consider safe, turn the seam to the other side and stitch as shown in Fig. 179. This gives a very neat and practical finish for attachment hemstitching and the seams may be finished in this way on lingerie dresses, underwear, aprons, etc.

### Hemstitching a Wide Hem

A wide hem may be stitched in position on one side instead of making a French seam. It is very necessary to allow enough material for the hems when planning the garment. For example, if a four-inch hem is required on a sheet, cut nine inches from one end of the material and hemstitch the two pieces together with the attachment, turn the hem and stitch close to the opening as shown in Fig. 180.

See Fig. 181 for a sample of hemstitching suitable for a seam, for trimming or for a wide hem.

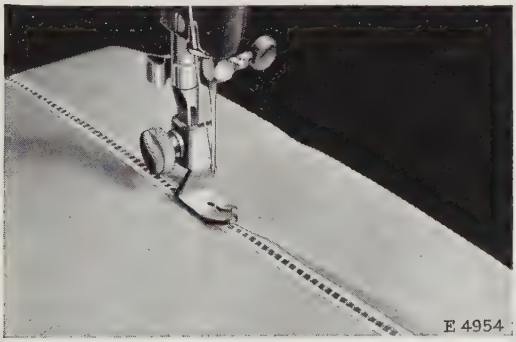



FIG. 180. FINISHING A HEMSTITCHED HEM

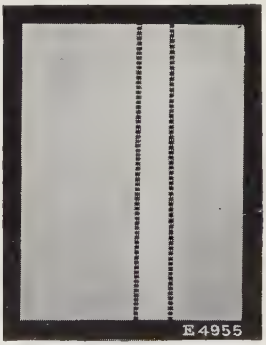



FIG. 181. WIDE HEM HEMSTITCHED

There is no attachment for producing the class of work done by special power hemstitching machines.

### Hemstitching with the Presser Foot

This method of hemstitching is very attractive to the average woman because of its close similarity to hand-made hemstitching. First draw the threads as for hand hemstitching, turn the hem

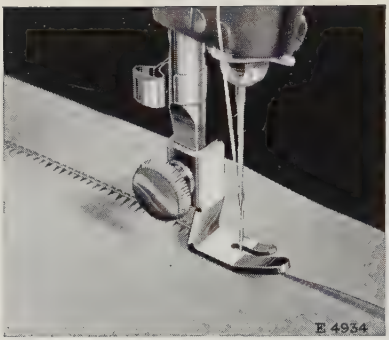



Fig. 182. Hemstitching with the Presser Foot

to the center of the drawn threads and stitch in position as shown in Fig. 182. The length of the stitch on the machine determines the number of threads caught at each stitch.

After stitching the hem in position, pull sideways to the edge of the solid material and the effect will be very pleasing. This method of stitching is attractive on fine material and is a very good substitute for hand hemstitching.

## THE "FAMOUS" BUTTONHOLE ATTACHMENT FOR SINGER MACHINES

### Preparing the Machine for the Buttonhole Attachment

Remove the presser foot and the thumb screw which holds it to the bar. Also remove the thread cutter by sliding it down the bar. If it is tight, turn it from side to side, at the same time pulling it down gently.

Cover the feed of the machine with the feed cover plate furnished with the Buttonhole Attachment. Place it on the bed of the machine with the needle hole in line with the needle hole in the throat plate and fasten in place with the screw also furnished with the attachment. See Fig. 183. After fastening firmly, turn the balance wheel over slowly by hand to make sure that the needle passes through the center of the hole.

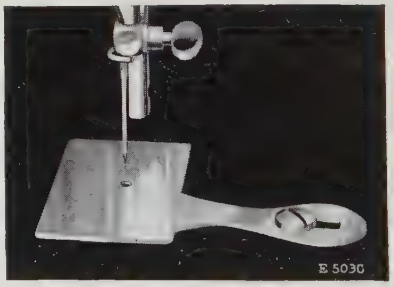



Fig. 183. Feed Cover Plate Attached to Machine

A special throat plate with no feed opening is supplied with the attachment for manufacturing purposes, but it is not necessary for family use. This special throat plate is attached after removing the regular throat plate and feed dog from the machine. This plate is also an advantage when working on unusually thick materials.

## Fastening the Buttonhole Attachment to the Machine

Fasten the attachment to the presser bar by placing the foot around the bar from the back and securing it firmly with the two screws at the side of the foot. See Fig. 184. The drive lever fits astride the needle clamp and should be placed in position at the same time the foot is attached.

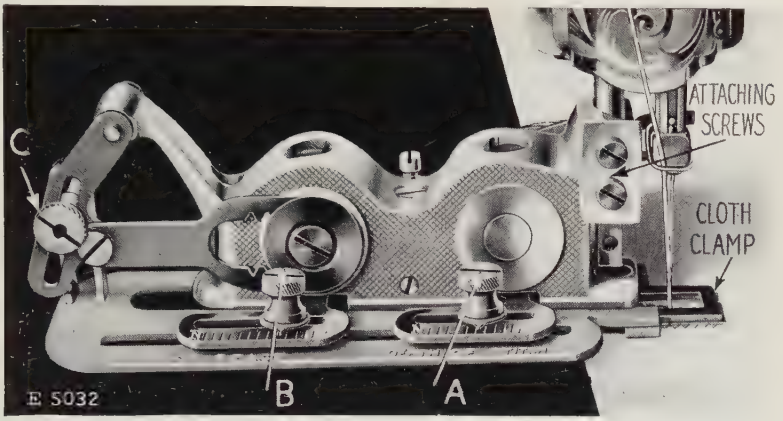



Fig. 184. The Buttonhole Attachment in Operation

Fasten the attachment high enough on the presser bar to permit the material to be slipped easily under the attachment. When the material has been inserted, the bar is lowered as in ordinary sewing. Special precaution should be taken to see that the bar is lowered quickly so that the feed teeth will grip the material. Sufficient pressure on the presser bar should be given to assist in holding the material firmly under the teeth.

## Making Adjustments

The Buttonhole Attachment may be adjusted for length of buttonhole, number of stitches, bite of stitches into the goods, and cutting space between stitches in the center of the buttonhole.

The size of buttonhole is determined by screw C, Fig. 184. For larger buttonholes, lower the screw and for smaller buttonholes, raise the screw. Always tighten the screw firmly when making adjustments.

For more stitches in the buttonhole, lower set screw D, Fig. 185, and turn eccentric screw E to lower its head. For any certain position of screw the attachment will make the same number of stitches, regardless of the length of buttonhole. Therefore, change the number of stitches when changing the size of buttonhole.

Various materials also require a different adjustment of the depth of stitch or bite. When working on light materials, adjust for a narrow bite by placing screw A, Fig. 184, in the direction

of letter N, and for heavier material in the direction of the letter W. Fasten the screw firmly after making adjustments.

The cutting space should also be regulated for various fabrics by adjusting screw B, Fig. 184. The proper space may be obtained by moving screw B in the direction of N for narrow space, and to W for wide space.

### To Operate the Attachment

Place the material under the cloth clamp, drawing it under the attachment to the point where the buttonhole is to be applied. It is always advisable, if possible, to work with the bulk of the material in front of the attachment and the edge along which the buttonholes are desired under the attachment as shown in Fig. 184.

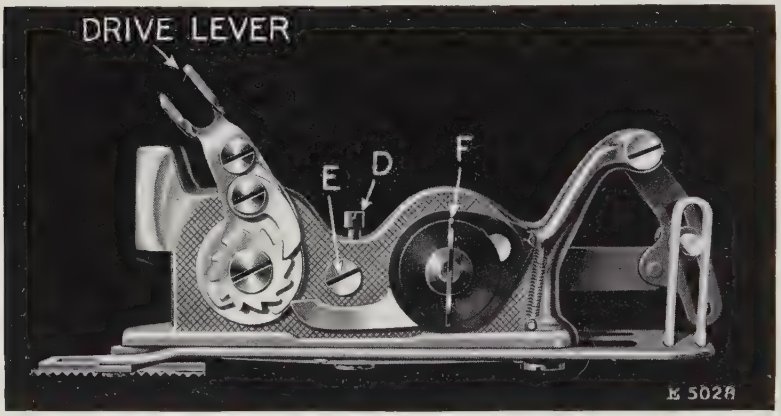



Fig. 185. Adjustments on the Buttonhole Attachment

To start the buttonhole at the end, turn screw F, Fig. 185, around until the cloth clamp is back as far as it will go. If the place for starting the buttonhole is indicated on the material, it is very easy to apply the buttonholes evenly. Always pull up the under thread when starting a buttonhole to avoid breaking it. Run the machine in the ordinary manner and the buttonhole will be made without guiding.

### Whip-Stitch and Purl Buttonholes

The whip-stitch buttonhole is a plain over-and-over stitch, while the purl buttonhole has the same effect as the hand-made buttonhole with the threads crossing on top. See Figs. 186 and 187.

For whip-stitch buttonholes use ordinary shuttle tension and loose top tension to draw locking point of stitch to under side of buttonhole. Use the same thread on top as in the shuttle unless the top thread is very fine, in which case use a heavier

under thread. See Fig. 186. Any breaking of thread or needles may be caused by the top tension not being properly adjusted. If the top tension is too loose, the thread will be looped on the underside and if it is too tight, it may break the thread or the needle by pulling the needle to one side until it strikes on the side of the hole in the feed cover plate.

Fig. 186. Whip Stitch Buttonhole

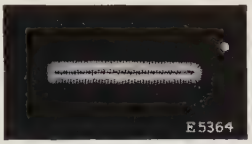



Fig. 187. Purl Stitch Buttonhole

For purl buttonholes (Fig. 187) make top tension tight and shuttle tension loose, to draw lock of stitch to top of goods. For silk buttonholes, purl silk may be used in the shuttle and ordinary sewing silk on top. If cotton thread is used, the top should be No. 40 or 50, six-cord.

It will be necessary to experiment with the tension to get the best results.

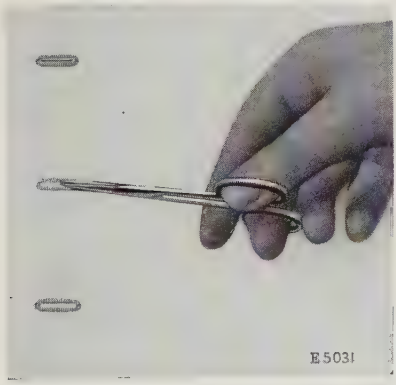



Fig. 188. Cutting Buttonholes

An extra-strong buttonhole is made by sewing around twice.

### Cutting the Buttonholes

After the buttonholes are made, they should be carefully cut with a pair of scissors having pointed ends. See Fig. 188. The few threads that fray from the first cutting may be trimmed away without injury to the buttonhole.

### Oiling the Attachment

Keep this attachment well oiled with Singer oil, as inferior oil gums the parts and prevents them from working properly. Oil each working part where there is any friction.

This attachment, making a $\frac{1}{16}$ inch hem is shown in Figure 189 and is used for simulating a rolled hem on fine materials such as georgette, chiffon, etc., making it unnecessary to use paper against the feed dog.

FIG. 189. THE FLANGE HEMMER

### How to Use the Flange Hemmer

Place the flange hemmer No. 36333, on the presser bar the same as the regular hemmer. The material to be hemmed should be carefully trimmed of all frayed edges and inserted into the hemmer about 4 or 5 inches from the end, weaving back and forth in a straight line until first fold is gained. Lower the hemmer and ease the material back to the first thread. Then stitch, holding both threads at the back and guiding in a straight line as with the regular foot hemmer.

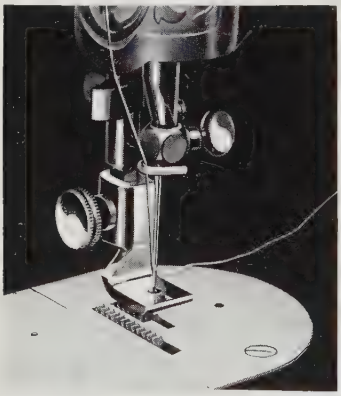


FIG. 190. BRAIDING PRESSER FOOT

### To Place on Machine

The attachment is fastened to the presser bar in the same manner as plain presser foot. Insert the twist through the eyelet in front of needle hole and back under braiding foot. Proceed to sew without further adjustment.

## BRAIDING PRESSER FOOT

The Braiding Presser Foot No. 36067, $\frac{1}{16}$ inch and $\frac{3}{16}$ inch wide, is shown in Figure 190. Size desired should be specified when ordering. The presser foot for braiding is especially adapted to outlining with silk twist or wool yarn for art work, as shown by sample in Figure 191.

FIG. 191. WORK DONE BY THE BRAIDING PRESSER FOOT

## PRESSER FEET FOR STITCHING ON EDGE AND INSERTING CORD

Presser feet for stitching on edge and inserting cord are furnished in two styles, 125035 with right toe and 15429 with left toe. Either presser foot produces identical work, the two styles being furnished to meet the individual requirement of the operator. Fig. 192 shows presser foot 15429 with left toe. Orders for these presser feet should specify the number of presser foot desired. These presser feet are fastened to the presser bar in the same manner as the regular presser foot, having the groove of the toe in line with the needle hole in throat plate.

Fig. 192. The Cording Foot with Left Toe

### To Use this Special Presser Foot

For **edge cording,** fold the edge of the fabric over the cord and stitch close to the cord guiding the work by hand.

For **corded seams,** fold the bias strip around the cord and insert the covered cord between the two pieces of fabric, with all raw edges together and the right sides of the fabric together. Then stitch close to the cord.

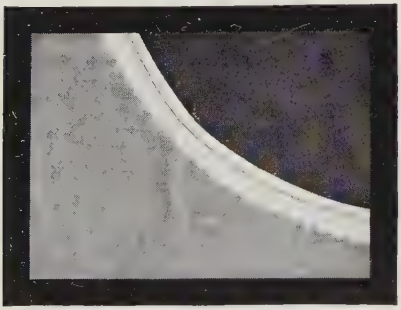


Fig. 193. Edge Finishing

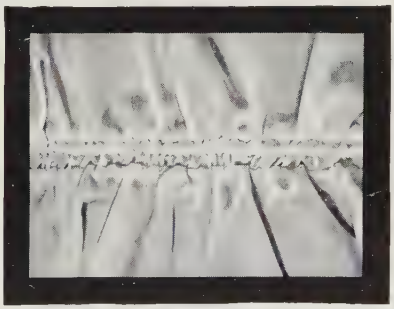


Fig. 193-A. Shirred Cording

For **edge finishing,** such as neck and armholes, place the cord in the centre of the bias strip and fold the bias strip around the cord, then place the fabric, with its wrong side up, over the covered cord, having all raw edges together. Stitch close to the cord.

**For shirred cording,** place the two pieces of fabric back to back and make one line of stitching. Insert the cord between the fabric next to the line of stitching and stitch close to the cord,

being careful that the stitching does not penetrate the cord. Continue cording until the desired number of cords have been inserted, then pull the cords and shirr as full as desired, after which stitch across the cord ends to keep the shirring in place. Fig. 193-A shows a sample of work done with this special presser foot.

## BLIND STITCH BRAIDER

The Blind Stitch Braider attachment, No. 36055 shown in Fig. 194, is furnished in three sizes: $\frac{3}{32}$, $\frac{1}{8}$ and $\frac{5}{32}$, and size desired should be specified when ordering. This attachment is very useful for braiding designs, where the stitching is not supposed to show. The proper size of pig-tail, rat-tail or soutache braid should be used with the appropriate attachment. Fig. 195 shows a sample of the work that can be simply and easily done with this attachment.

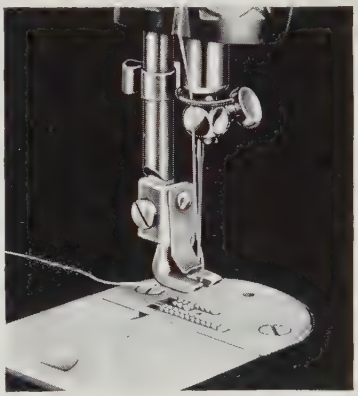


Fig. 194
The Blind Stitch Braider

### Attaching the Blind Stitch Braider

Place the attachment on the presser bar in the same manner as the presser foot. Turn the spring to the right and insert braid through the hole from the back to the front, between the toes and back under the foot. Turn spring all the way down. Place material under the braider, with the place where stitching should begin directly under the needle, and lower presser bar.

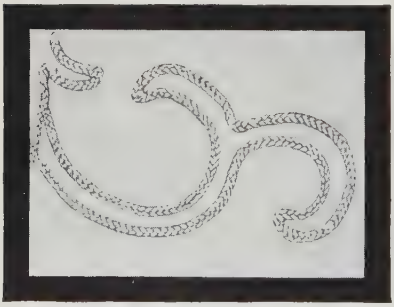


Fig. 195. Work Done by the Blind Stitch Braider

See that the needle comes down close to the edge of the braid and regulate tensions to get the desired effect. A loose tension will allow the braid to be rather flat and a tight tension will make it stand on up edge. The needle catches the under side of the braid, thus permitting the outline to be followed while all stitches are concealed.

## TUBULAR TRIMMING ATTACHMENT

The Tubular Trimming Attachment No. 35985, shown in Fig. 196, is furnished in three sizes $\frac{3}{32}$ inch, $\frac{1}{8}$ inch and $\frac{5}{32}$ inch, and orders should specify which size is desired.

Fig. 196. The Tubular Trimming Attachment

Bias strips of soft silk for tubing should be cut $\frac{11}{16}$ inch wide for smallest, $\frac{7}{8}$ inch for medium and $1\frac{1}{8}$ inch for the largest size mentioned. If satin or heavier material is used, the strips should be a trifle narrower. Use a No. 11 needle, A silk, with a loose tension and long stitch.

### To Attach and Use the Tubular Trimming Attachment

Fasten the attachment to presser bar in the same manner as presser foot. With the stiletto, push the end of the bias strip, wrong side out, through the folder that surrounds the tube, draw the strip back from you 3 or 4 inches, then insert the threading wire through the tube from the front and with this wire, pull the end of bias strip toward you through the tube. Start the machine, at the same time draw gently on the end of the strip which you have drawn through the tube.

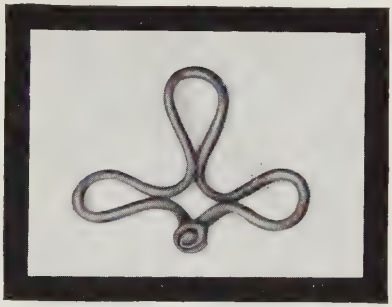


Fig. 197. Work Done by the Tubular Trimming Attachment

### Insert Filling Material

As soon as the stitched portion of the strip has entered the back end of the tube, the end of the roll of filling material (which may be a roll of soft wool or cotton) can be placed against it and will be drawn in and covered as the strip is pulled toward you. The pulling must be as fast and even as the stitching. If the material pulls to one side, examine the position of attachment over the feed and adjust. Fig. 197 shows a sample of work done with the Tubular Trimming Attachment.

## THE SINGLE THREAD EMBROIDERY ATTACHMENT

The Single Thread Embroidery Attachment No. 26538, Fig. 198, may be used for outlining large motifs on clothing or household furnishings with equal effect. Silk twist, chenille, metallic threads, or cotton crochet thread may be used in the attachment to form series of connected circles upon the face of the fabric, each of which is fastened by a stitch of the needle thread. Stamped designs or other figures can be easily followed and a very attractive ornamentation produced, as shown in Fig. 199.

FIG. 198. THE SINGLE THREAD EMBROIDERER

### To Attach the Single Thread Embroidery Attachment to the Machine

Raise the needle bar to its highest point and remove the needle. Raise the presser bar, take off the foot and push up the thread cutter as far as it will go upon the presser bar. Raise the driving arm of the attachment and place its fork on the hub of the needle clamp, then pass the body of the attachment to the left between the needle bar and presser bar and fasten it firmly in position on the presser bar with the presser foot thumb screw.

Insert the small end of the spool wire (No. 26535) Fig. 200, for the embroidery thread into the oil hole in top of the machine arm near the head, Fig. 198, with the long part extending back of the machine, and place the spool of embroidery thread upon it.

### To Thread the Single Thread Embroidery Attachment

Before threading the Embroidery Attachment be sure that the machine is in good order and properly threaded for ordinary stitching. Now pass the end of the embroidery thread from the spool, from the front to back through the eyelet (1) nearest to you in the attachment driving arm, Fig. 200, then up and into the eyelet (2) at the top of the attachment, down and backward through the other eyelet (3) on the driving arm, and downward so that it will pass between the back of the eyelet and spring, down

FIG. 199. WORK DONE BY THE SINGLE THREAD EMBROIDERER

and toward you through the eyelet (4) at the right hand near the presser foot. With the needle still at its highest point thread to the left through the hole (5) in the upper side of the looper and then to the right through the hole (6) in the left hand side of the looper. Place the threads under the presser foot (7), insert the fabric to be embroidered under the attachment, let down the presser bar and commence stitching following the design previously stamped upon the fabric.

In order to obtain the best results, it is well to first test the stitch on a separate piece of material and carefully adjust the tensions until the desired effect is obtained.

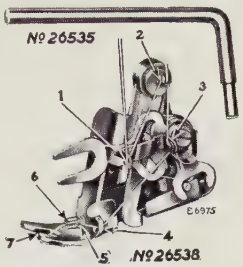



Fig. 200. Threading the Single Thread Embroiderer

## THE TWO-THREAD EMBROIDERY ATTACHMENT

The Two-Thread Embroidery Attachment No. 35505, Fig. 201, is especially suited to the ornamentation of draperies, table scarfs and household furnishings in general. It is equally effective in outlining applique designs.

### To Put on the Attachment

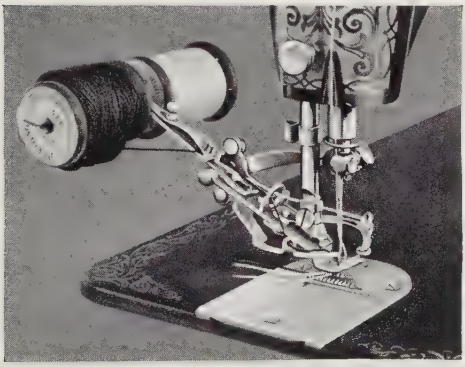


Fig. 201. The Two-Thread Embroiderer

Raise the needle bar and presser bar to highest point, take off presser foot and place the forked arm of driving lever astride the hub of the needle clamp. Extend the arms of the spool bracket, place the hole near the end of this bracket over the head of the pin near the back end of the attachment. Press down and toward you until the bracket is held firmly in position. Oil every place in the attachment where one piece of metal is in movable contact with another and wipe off the surplus oil.

### To Thread the Two-Thread Embroidery Attachment

The embroidery thread should be evenly wound on the spools and not criss-crossed. Place the spools of embroidery thread upon the spool arms so that the thread will lead off from the under side of the spools; lead them under the end of the ten-

sion spring and between the two pins near the end of the spring where they will be crossed; then down through the large hole, after which one is threaded through the two holes in the right hand arm and the other through those in the left hand arm, as shown in the illustration. Lay both threads back under the presser foot.

### To Use the Attachment

It is only necessary to follow the pattern previously stamped or otherwise marked on the material; the movement of the arms of the attachment causes the two embroidery threads to cross each other in advance of each stitch so that they are fastened to the fabric by the needle and shuttle threads. Better results will be obtained by making a long stitch, especially when using a heavy embroidery thread. The stitch should never be shorter than twelve to the inch.

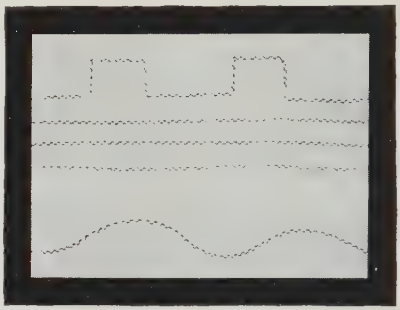


Fig. 202. Work Done by the Two-Thread Embroiderer

In the finished work the thread carried by the right hand arm lies under that carried by the left hand arm and if embroidery threads of different sizes are used at the same time the heavier or larger thread should be carried by the right hand arm. Very pretty effects can be produced by using arrasene or chenille, threading the right hand arm only and using a needle thread having a color which contrasts strongly with the arrasene or chenille. Fig. 202 shows a sample of work done with this attachment.

### The Tensions

The tension on the needle thread should be as tight as the thread will stand without breaking. The tension on the bobbin thread should be the same as for ordinary stitching. The embroidery threads require no tension but just sufficient friction from the spring to keep them straight.

### Turning Corners

Corners should be turned while the needle is in the goods and the arms of the attachment are separated; the stamped design can then be plainly seen on the fabric.

# Attachments for Family Sewing Machines

(ORDER BY NAME AND NUMBER)

## REGULAR ATTACHMENTS*

| Name of Attachment | 66-1 Mach. | 66-4 99-13 Mach. | 127 128 Mach. | 15 115 Mach. | 101 Mach. | 24 Mach. |
|---|---|---|---|---|---|---|
| Binder | 36595 | 36594 | 36594 | 36594 | 36594 | ..... |
| Adjustable Hemmer | 35957 | 35931 | 35931 | 35931 | 35931 | 25503-$\frac{3}{32}$" 25617-$\frac{1}{8}$" 25504-W |
| Foot Hemmer | 28789 | 35857 for 66-4 35996 for 99-13 | 35857 | 35857 | 120318 | ..... |
| Tucker | 36584 | 36583 | 36583 | 36583 | 36583 | 26516 |
| Ruffler (5 stitch) | 120295 | ..... | ..... | ..... | ..... | ..... |
| " (12 stitch) | ..... | 120598 | 120598 | 120598 | 120598 | ..... |
| " (1 stitch) | ..... | ..... | ..... | ..... | ..... | 26774 |

## SPECIAL ATTACHMENTS

| | | | | | | |
|---|---|---|---|---|---|---|
| Braiding Presser Foot | | 36067-$\frac{1}{16}$, $\frac{3}{16}$ | 36067-$\frac{1}{16}$, $\frac{3}{16}$ | 36067-$\frac{1}{16}$, $\frac{3}{16}$ | 36067-$\frac{1}{16}$, $\frac{3}{16}$ | ..... |
| Blind Stitch Braider | 36074 | 36055 | 36055 | 36055 | ..... | ..... |
| Buttonhole | 36941 | †36935 | 36935 | 36935 | ..... | ..... |
| Edge-Stitcher | 36867 | 36865 | 36865 | 36865 | 36865 | 36866 |
| Embroidery One Thread | 35051 | 26538 | 26538 | 26538 | 26538 | ..... |
| Embroidery Two Threads | 35854 | 35505 | 35505 | 35505 | ..... | ..... |
| Feed Cover Plate | 32589 Oval 32622 Flat | 32589 Oval 32622 Flat | 8335 | 15359 | *66628 | ..... |
| Flange Hemmer | 35554-$\frac{1}{16}$" | 36333-$\frac{1}{16}$" | 36333-$\frac{1}{16}$" | 36333-$\frac{1}{16}$" | ..... | ..... |
| Gathering Foot | 36787 | 25979 | 25979 | 25979 | 120363 | *36782 |
| Gauge Presser Foot with Adjustable Guides | 36084 | 35207 | 35207 | 35207 | 35207 | ..... |
| Hemstitcher | 28986 | 120687 | 120687 | 120687 | 120687 | 35024 |
| Presser Foot for Stitching on Edge and Inserting Cord (left toe) | 32634 | 15429 | 15429 | 15429 | 15429 | 34447 |
| Presser Foot for Stitching on Edge and Inserting Cord (right toe) | ..... | 125035 | 125035 | 125035 | 125035 | ..... |
| Quilter | 35958 | 35932 | 35932 | 35932 | 120319 | 25505 |
| °Shirring Plate | 35960 | °35960 | °35934 | °35938 | °120400 | ..... |
| Stripping Foot—Spring | 86294 | 86294 | 86294 | 86294 | *86294 | ..... |
| Tubular Trimming | 35987 | 35985 | 35985 | 35985 | ..... | ..... |
| Underbraider | 35963 | 35963 | 35937 | 35940 | 120348 | ..... |

# Attachments and Accessories Suitable for All Types of Machines

| | |
|---|---|
| *Belt Hook | 25027 |
| Belt Punch | 120616 |
| Bias Gauge | 25525 |
| *Cloth Guide—Lock Stitch Machines | 25527B |
| " " —Chain " " | 25618B |
| Darner—Large for Flat Work | 36088 |
| Darner—For Stockings | 35776 |
| *Oil Can | 36570 |
| Needle Threader | 36806 |
| *Screwdriver—Large | 25537 |
| *Screwdriver—Small | 120378 |
| Stiletto | 25539 |

*Indicates Attachments and Accessories supplied with Sewing Machine.
†For 66-4 Machine only. Cannot be used on 99.
°Do not use with 12 stitch Ruffler for 6 and 12 stitches.

CHAPTER 8

# ELECTRIC SEWING MACHINES, MOTORS AND LIGHTS

The electric sewing machine is not only the machine of the future, it is the machine of to-day. Over two-thirds of the homes in the United States are using electricity for light and power, few new homes are being built without this great convenience and old homes are being wired each year in large numbers. It is but natural that women who have experienced the convenience, the saving of time and the lightening of labor characteristic of other electric appliances, such as electric irons, vacuum cleaners and washing machines, should prefer an electric sewing machine when a new one is purchased. Young women establishing new homes almost invariably select electric machines. Of the younger generation now in the schools, nearly all will eventually own electric sewing machines. To provide these young women with adequate training, domestic art departments in schools and colleges are now being equipped with the various types of electric machines. The era of the electric sewing machine has arrived.

## The Advantages of the Electric Sewing Machine

The chief difference between electric sewing machines and those of other types is that the former are operated by small electric motors instead of by hand or foot power. No physical effort is required on the part of the operator, even at the highest speed, which may be three or four times that of treadle operation.

Another advantage much appreciated by many women is that electric operation leaves them free to concentrate on the pleasant and interesting part of home sewing, the planning and construction of the garment. Most women really enjoy this part of the work and sewing thus becomes a welcome diversion from other household duties.

The greatly increased speed of the electric machine is utilized to best advantage on long straight seams such as those in draperies and bed linen. Some women feel that they lack the time or strength for work of this kind, but many have been pleasantly surprised to learn that with an electric machine making 1000 stitches a minute if desired and requiring no effort on the part of the operator except to guide the fabric, an entire set of draperies or bed linen may be completed in a short time and without fatigue.

The portable type of electric sewing machine possesses additional advantages which have made it popular with many women. A machine of this kind is light enough to carry to any part of the house where it may be most pleasant or convenient to sew and can be used on any available table. When the work is finished the machine may be put away in a closet or other small space and requires no further attention until needed again. Weighing no more than the average suitcase and occupying less space, it is ideal for traveling or in the country home.

A portable electric machine, equipped with a small electric light, as all complete electric machines should be, affords to its owner the opportunity of sewing anywhere at any time regardless of the hour of the day or conditions of illumination. This complete freedom in the choice of sewing time and place is a great advantage to the busy woman.

### Electric Sewing Motors

The first electric motor for sewing machine operation was introduced in 1889 and was attached to the arm shaft in place of the balance wheel. As electrical science developed, other types followed the first, each smaller, more economical and more reliable than the one before. The one in general use to-day is the Singer Bracket Universal Motor shown in Fig. 203, (which motor will operate at a given voltage on Direct Current as well as Alternating Current from 25 to 75 cycles. A motor that will do this is called a Universal Motor.) This motor is located back of the arm, entirely out of the way of the operator, and is firmly attached to the arm by a single screw. It drives the machine by an endless belt running from the motor pulley to the regular

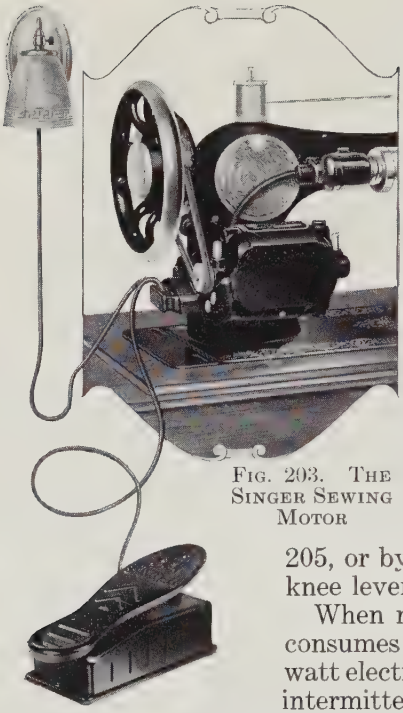


Fig. 203. The Singer Sewing Motor

belt groove in the balance wheel. No adjustment of the motor is required when lowering the head of the machine into the stand of a treadle machine or when applying the cover of a portable machine. Electric current is supplied to the motor from an electric light socket through a cord as shown in Fig. 203. Any desired speed, up to 1000 stitches a minute, may be obtained by varying the pressure of the foot on the lever of the controller, which is placed on the floor next to the treadle, as shown in Fig. 205, or by the pressure of the knee on the knee lever shown in Figs. 212 and 214.

When running at full speed the motor consumes about the same current as a 50 watt electric lamp. As most sewing is done intermittently and at various speeds according to the nature of the work, the average cost of operation is about one cent for four hours of sewing.

All working parts of this motor are entirely enclosed and absolutely safe. The wiring, which has been approved by the National Board of Fire Underwriters, is the same as on other approved electric appliances such as fans, toasters, irons, etc., and may be handled in the same manner.

## Electric Lights for Sewing Machines

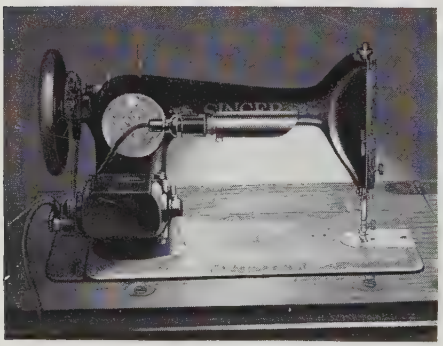


Fig. 204. The Singerlight

The problem of proper illumination for sewing has been solved by the use of a small electric lamp attached to the machine and arranged to throw the rays of light on the bed of the machine without glaring into the eyes of the operator. Fig. 204 shows this ingenious device, known as the

"Singerlight," attached to the back of the arm and connected by a short cord to the three-pin terminal and the cord supplying electricity to the motor. When the machine has no motor attached, a longer cord is furnished for the light. The lamp consumes only 15 watts, making the cost of electricity negligible. The amount of light is just right for either light or dark goods and the location of the lamp is such as not to interfere with the free passage of goods under the arm, even on bulky work.

With such a light, sewing may be done without eye strain in any part of the home at any time. It is unnecessary to move the machine near a window to get good light or to wait for a bright day to do your sewing. Artificial illumination usually found in homes is generally unsatisfactory for sewing, being insufficient or casting shadows on the work.

## Various Types of Electric Sewing Machines

Electric sewing machines are of three principal types: treadle machines with a motor attached, portable machines and cabinet table machines.

The first type of electric sewing machine is the ordinary treadle machine to which a motor has been added, as shown in Fig. 205. The motor is attached with a single screw to the seat on the arm below the balance wheel, the regular belt removed, the motor belt put on in its place, the motor cord screwed into an electric light socket, the foot control box connected to the three-pin terminal and the treadle machine has become an electric. The whole process takes only a few minutes and can be done by anyone without electrical or mechanical skill. Should it ever become necessary to revert back to treadle operation, this can be done by removing the motor belt and putting on the belt running from the band wheel. It is not even necessary to remove the motor. The change can be made quickly.

Fig. 205. Treadle Machine Equipped with Motor and Foot Control

The Singer Universal Type Motor can be attached to all Singer lock stitch family machines made since 1911. For machines older than this a special type of motor is available but it is usually not advisable to put a motor on such an old machine.

The Singerlight can also be added to any Singer machine in a moment without tools or electrical knowledge. It is attached to the back of the arm in place of the cover plate with a single thumb screw and the cord plugs into the three-pin terminal motor cord. See Fig. 203. The motor and light may be used together or separately, but require only one common cord to the electric light socket. The light is turned on and off by a push button in the socket and the motor is started and stopped or run at any desired speed by varying the pressure on the foot control lever. To stop, release all pressure; to start, press gently on the lever; to sew faster, press a little harder. Only a light pressure is necessary even at the highest speed and no physical effort is required at any time.

Fig. 205-A. Treadle Machine Equipped with Motor and Treadle Control

## Various Models of Portable Electric Machines

Portable electric machines consist of a sewing head to which a motor and Singerlight have been added, the whole set into a base, as shown in Fig. 207, and provided with a cover which locks into the base. This serves as a carrying case as well as a protection for the machine. Inside the cover are located the instruction book, box of attachments, oil can and knee lever, as shown in Fig. 206 The motor cord is coiled up and placed on the bed of the

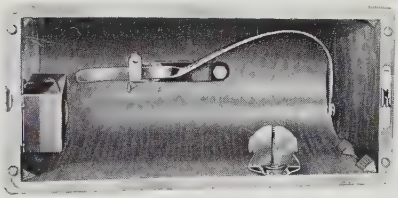


Fig. 206. Inside of Cover Showing Position of Accessories

Fig. 207
Portable Electric
Machine with Foot
Control

Fig. 208
Portable Electric
Sewing Machine
Enclosed in
Carrying Case

machine before closing the case. The outfit then becomes a compact unit which may be carried anywhere and contains everything necessary for the care and operation of the machine. See Fig. 208.

Machines of this type may be had with foot-operated speed control unit, as shown in Figs. 203 and 207, but a more convenient device for the same purpose is the knee lever control shown in Figs. 209 and 216. The resistance unit for varying the motor speed is placed inside the base and is operated by a lever which projects through the front of the base at the right. See Fig. 209. A gentle pressure of the right knee against the lower end of this lever starts the machine slowly and the speed can be increased as desired by pushing farther to the right. When the pressure on the knee lever is released, the machine stops automatically. This arrangement avoids the use of the foot control box on the floor and leaves both feet of the operator free.

Fig. 209
Portable Electric
with Knee Control

## Portable Electric Lock Stitch Machines

Although any of the types of family machines described in Chapter 2 may be had in portable form, equipped with motor, light and foot control, these outfits weigh about 40 pounds, which is too heavy for easy portability, especially if they are to be moved frequently.

There are available, however, several similar machines considerably lighter in weight and occupy less space. These are Singer No. 128 (Fig. 207), a long shuttle machine similar to Singer No. 127, and Singer No. 99 (Fig. 209), a round-bobbin machine similar to Singer No. 66. Both are known as three-quarter sized heads; that is, the arm and bed have been shortened to save weight and space. The sewing mechanism is the same as on corresponding types of full-sized heads and there is plenty of room under the arm to permit the passage of any kind of home sewing. Both the 99 and 128 machines weigh approximately 33 pounds, complete with carrying case, motor and all accessories. This reduction in weight makes them readily portable and the more compact size is frequently an advantage.

The latest and best type of portable electric lock stitch machine, the Singer No. 101-12, with full-sized head made of aluminum, is shown and described on page 137.

## The Portable Electric Chain Stitch Machine

The Singer Single-Thread Chain Stitch Machine No. 24, described in Chapter 2, is available on a treadle stand, with or without motor, but its most useful form is a portable electric, shown in Figs, 210 and 211. This is the smallest, lightest and simplest of all portable electric sewing machines. The motor, speed control box and attachments fit inside the base, out of sight and out of the way but easily accessible by raising the head as shown in Fig. 211.

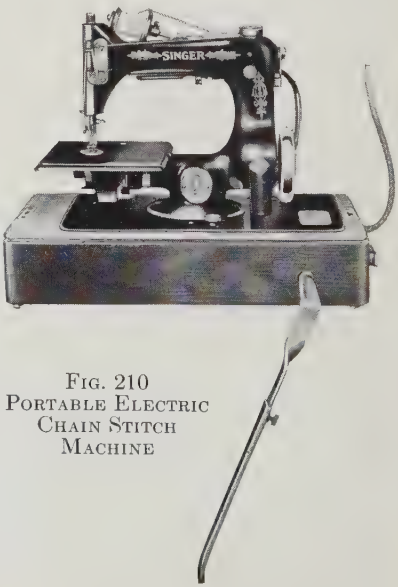



Fig. 210
Portable Electric
Chain Stitch
Machine

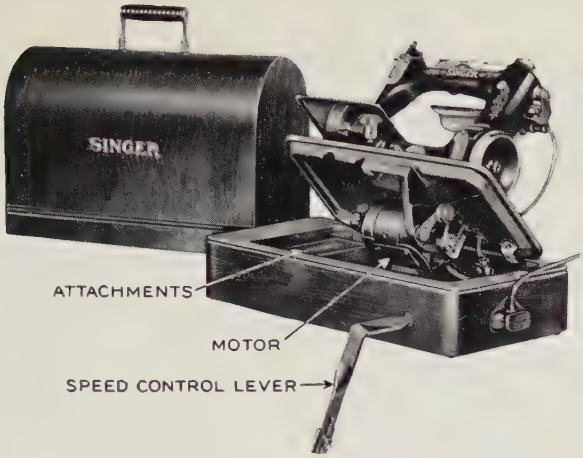



Fig. 211. Chain Stitch Machine and Cover

This machine complete weighs 26½ pounds and is 14 inches long, 7¾ inches wide and 13 inches high.

Electric Combination Table, No. 307, similar to Fig. 217, is used with this machine, as is also Library Table No. 40 shown in Fig. 212.

## Electric Library Table Machines

To meet the demands of modern homes where every item of equipment must be ornamental as well as useful, electric sewing machines may be had in handsome cabinets of graceful design, entirely concealing the machine when not in use, and serving as a desk or table in any room. These cabinets are known as No. 40 and are furnished in walnut, mahogany or mission

Fig. 212. Machine Ready for Use on No. 40 Cabinet

to match present styles in furniture.

In this form there are available the Singer No. 66 machine and a new model designed and built especially for electric motor operation, the Singer No. 101. The latter is the most advanced in mechanical and electrical design of all sewing machines.

Fig. 213. No. 40 Cabinet with Machine Closed

It is operated by a special type of electric motor, built into the head and geared to the sewing mechanism. The Singerlight is also an integral part of the machine. All wiring is concealed except the cord leading to the electric socket. All movements are rotary, making the machine very quiet, free from vibration and long-lived, even at the high speeds of electric operation. This speed is controlled by the adjustable knee lever, which may be folded up out of sight when not in use. Fig. 212 shows the machine ready to operate and Fig. 213 closed. When closed it is an attractive piece of furniture, giving no hint of the sewing machine within. This type of machine is known as Singer No. 101-4-40

## Electric Flat Top Table Machine

In addition to the Library Table, there is available an Electric Flat Top Table known as No. 306 and which is shown in Figs. 214 and 215.

This table has no hinges or knobs to break the excellent lines of the design, the attachment drawer having been placed in one end as shown in the picture and swinging wide open so that its contents are always readily available. This drawer is equipped with six spindles for spools of thread and bobbins, a separate holder for the oil can and a sizable container for attachments and tools. This table

Fig. 214. Machine Ready for Use on No. 306 Cabinet

Fig. 215. No. 306 Cabinet with Machine Closed

is equipped with adjustable knee control and carbon disc rheostat, enabling the operator to keep the machine under perfect control at all times and running it at any speed desired.

The machine head drops down beneath folding sections of the top when not in use, leaving a neat flat surface for a variety of uses, as shown in Fig. 215. Either a 66 or 101-4 head may be applied to the 306 table and it is furnished in either walnut or mahogany and will match up nicely with other furnishings.

## The Aluminum Portable Electric Machine

Rotary Machine No. 101, described in the preceding paragraphs, has many advantages over any other type, but because of its large size and rigid construction would be too heavy to use as a portable machine. This problem has been solved by the use of aluminum for all heavy parts, such as the arm and bed. This extremely light metal is just as strong and rigid as cast iron but weighs only one-third as much. The saving in weight thus effected makes the complete outfit easily portable, weighing only 31 pounds. In every other respect the head is identical with Machine No. 101-4. The aluminum machine with portable base and cover is known as Singer No. 101-12.

Fig. 216. Aluminum Portable Electric Machine

Fig. 217. Portable Electric Machine in Use with Combination Table No. 301

### A Combination Table for Portable Electric Machines

Although Portable Electric Machine No. 99, like all other Singer portable electrics, may be used on a dining room or library table or any other table of substantial construction, many people prefer to have a table especially designed for the purpose. Electric Combination Table, C. W. 301, has recently been developed to meet this demand. Fig. 217 shows this table in use. The table top is cut out slightly larger than the portable base, allowing it to fit into the table with the top of the base level with the table top. This gives a flat sewing surface of ample size for home or school sewing. When the sewing is finished, the machine may be lifted out, closed up in the usual manner and put away. The platform on which the machine rested may be brought up level with the top

of the table and clamped in this position, thus providing a useful table for many purposes, such as that shown in Fig. 218.

A special straight knee lever is used with this table and fits inside the machine cover when not in use. The recess in the table provides for the 99 and 128 Machines with knee or foot control and the 128 Machine with hand attachment. Special tables have been provided for the 101-12 and 24-66 portable electric machines and are known as No. 304 and 307 respectively.

Fig. 218. Combination Table No. 301 as a Piece of Fine Furniture

Electric Combination Tables Nos. 301, 304 and 307 are not only excellent sewing tables at a very nominal cost but also serve many other useful purposes about the home and school room. They have legs similar to those on the No. 40 Cabinet and the whole design is quite attractive. These advantages have readily been recognized and the demand for these tables is rapidly increasing. They are furnished in walnut and mahogany.

The electric combination table is also convenient for hand sewing, small cutting and basting. The necessary needles, pins, tailor's chalk, etc., may be kept in the drawer. Where portable machines are used in a class room without these tables the cutting table should be made the correct height for the sewing machine.

### Wiring Class Rooms for Electric Machines

If only a few electric machines are to be used, they can be arranged along the sides of the class room, and electric outlets can be placed in the base board for each machine or waist high in the walls. If possible, do not connect more than one machine to one outlet or run wires across the floor to another row of machines. These should be connected through a drop light cord from the ceiling over each machine. Eight feet of electric cord is furnished with each motor or electric machine, which can be plugged into the overhead socket.

To simplify the overhead wiring, arrange the machines in rows so that one main line of wiring along the ceiling can be tapped for drop cords to each machine in the row. The average normal current consumption for Singer motors on family machines is 50 watts and for the Singerlight 15 watts, a total of 65 watts per machine. This information should be given to the electrician who does the wiring.

## The Care and Adjustment of Electric Motors

Electric current used in homes and schools is either direct or alternating and is supplied at a certain voltage. The kind of current (direct or alternating) and the voltage must be specified in ordering electric motors or machines, and carefully checked if any trouble is experienced in their operation. All motors are designed to operate on a certain voltage, which is stamped on the nameplate, and will not operate satisfactorily on any other voltage. All Singer motors will operate on either direct or alternating current from 25 to 75 cycles at a given voltage.

### Singer B. U. and S. U. Motors

The Singer B. U. (Bracket Universal) Motor is attached with a single screw to the arm on Singer machines of Classes 15, 66, 99, 115, 127 and 128, as shown in Fig. 203, and drives the machine by an endless fabric belt.

The S. U. (Singer Universal) Motor is built into the head of the 101-4 and 101-12 machines, as shown in Fig. 239, transmitting power directly to the arm shaft of the machine through a pair of gears.

This difference in application leads to different methods of care and adjustment, as explained in detail on the following pages, but so far as the practical operation of the machines on which these motors are used is concerned they are identical.

## THE CARE AND ADJUSTMENT OF THE B. U. MOTOR

### Attaching the B. U. Motor to the Machine

Remove the leather belt originally supplied with the machine for foot power, or if a hand attachment machine, remove the hand attachment.

Scrape off the japan from the tongue on the arm directly under the balance wheel, over which the slot in the motor bracket will fit. This is necessary so that the motor bracket will slide up and down freely.

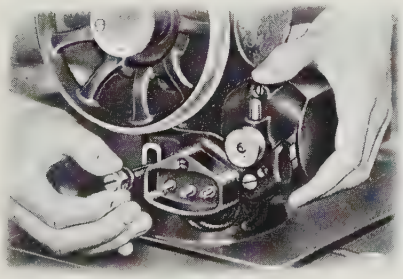


Fig. 219. Attaching the B. U. Motor to the Machine

Place motor bracket on this tongue, as shown in Fig. 219, so that the hole in the center of the tongue can be seen through the slot in the motor bracket. Put the washer on the screw and insert the screw. After shifting the motor upward as far as it will go, tighten the screw.

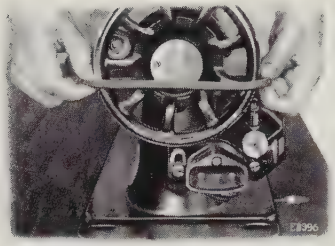


FIG. 220. PLACING BELT ON B. U. MOTOR

### Placing the Belt on the B. U. Motor

Place the belt on the Machine upward from the bottom of the balance wheel, as shown in Fig. 220, until it touches the underside of the arm shaft extension, then slip the belt over the top of the balance wheel. Now place the belt in the groove in the balance wheel then force it into the groove in the motor pulley.

### Regulating Belt Tension on the B. U. Motor

To adjust the belt tension loosen the attaching screw about one turn with a screwdriver, as shown in Fig. 221. This will allow the motor to drop downward. Now firmly tighten the screw, and the belt should have the correct tension.

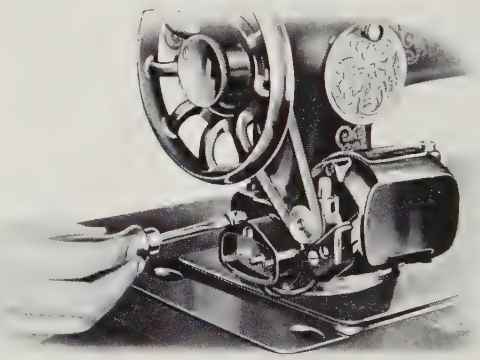


FIG. 221. REGULATING BELT TENSION ON B. U. MOTOR

### How to Attach the B. U. Motor Cord to the Machine

At the end of the cord, leading from the lamp socket, is a plug, which should be firmly pushed over the three pins in the three-pin terminal. Then screw the other end of the cord with the attachment plug into a lamp socket or base outlet. Place the foot control in position on the floor, or the knee control in position on the machine, and the machine is ready for operation Turn on the current and test motor by varying the speed with the control. Do not operate motor at full speed when disconnected from sewing machine. It will run much faster than intended and is likely to damage armature windings.

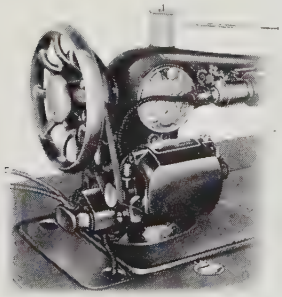


FIG. 222. ATTACHING MOTOR CORD TO MACHINE

## How to Attach the Knee or Foot Control

The knee control is the lever by means of which this type of portable machine is started, stopped and its speed controlled. A rack has been provided on the inside of the cover to hold this lever when not in use. To attach, first place the machine on the table, taking care that the base is flush with the edge of the table. This allows the lever to be placed in the position shown in Fig. 223. Push the round end of the lever into the hole in the base of the machine until the slot in the lever engages with the coupling of the control box. When the lever is then brought down into working position the machine may be operated. (See Fig. 224).

If the lever is not placed in the position shown in Fig. 223, when attaching it, connection will not be made with the control box coupling. Learn to make motor connections quickly and easily and it will be a pleasure to use the machine.

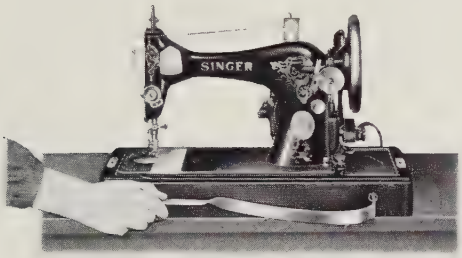



Fig. 223. Attaching Knee Lever

The machine is operated by the pressure of the knee against the control lever. A light pressure will run the machine slowly, while increased pressure will increase the speed of the machine.

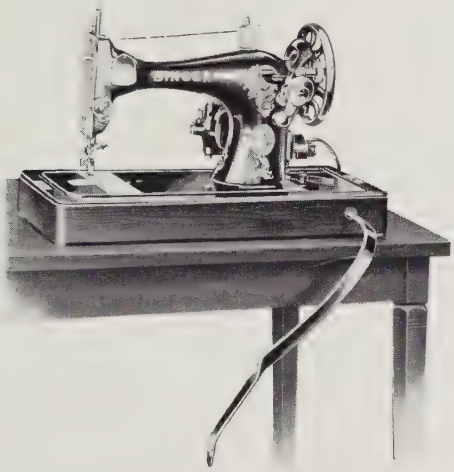


Fig. 224. Knee Lever Ready to Use

The foot control is attached to the motor by cords leading to the three-pin terminal shown in Fig. 222. The foot control is placed on the floor in a position comfortable to the operator and is operated by placing the foot on the lever and pushing it down to increase the speed of the machine.

## Filling the Grease Cups on the B. U. Motor

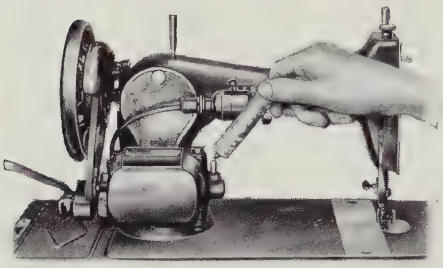


Fig. 225. Lubricating the B. U. Motor

To insure easy running and prevent unnecessary wear of parts, the motor must be properly lubricated. A motor that is run every day should be lubricated once a month, but with average use once a year is sufficient.

The B. U. Motor is lubricated through the cups shown in Fig. 225. Use only Singer Lubricant. **Never use oil on a Singer motor.** If the lubricant does not go into the cups as freely as it should, take the stiletto from the attachment box or use a toothpick and make an opening. Sometimes dust collects at this point, making it necessary to clean the top of the cap.

## The Importance of Brushes in Motors

Motor brushes convey the electric current from the wires to the revolving part of the motor (commutator) and unless they make good contact the current is obstructed and the motor will run slow or stop. A brush that is dirty or one that has worn down to the spring is apt to cause motor trouble. Brushes are easily removed for examination as described in the following paragraphs. Carefully inspect a new brush and the spring to which it is attached, so as to be able to recognize one that is defective, dirty or badly worn. When you have motor trouble and have made sure that there is electricity at the light socket and all connections are properly made, next examine the motor brushes. Cleaning or replacing them will often correct the trouble.

## Removing and Replacing Brushes on the B. U. Motor

To change the brushes on the B. U. motor you must first remove the motor from the machine as shown in Fig. 226. Turn the motor over on end, as shown in Fig. 227, and you will note the two brush caps A and B. Unscrew the caps one at a time and you will be able to remove a spring to which is attached a square piece of carbon called a brush. Note the direction of the concave end of the brush and replace it in the same way.

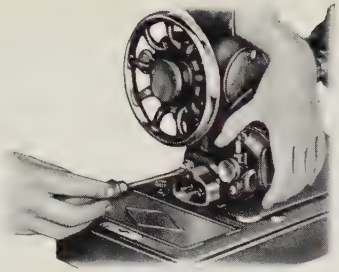


FIG. 226. RELEASING THE B. U. MOTOR

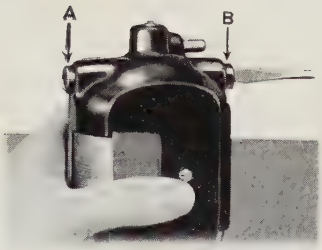



FIG. 227. REMOVING BRUSH CAP

If the brush is oily or dirty, clean it thoroughly with a soft cloth. If the square portion has worn down close to the spring, detach the brush from the spring and insert a new one.

Replace the brush as shown in Fig. 228, making sure that it slides freely in the brush tube. When you have inserted it as far as it will go, tap it gently and if you hear a clear sound as it comes into contact with the commutator. you will know that it is in the proper position.

FIG. 228. REPLACING THE BRUSH

If you have forgotten which way the brush came out turn the end of the motor toward you and see that the concave side of the brush is also toward you as in Fig. 229.

Care should be taken when replacing the brush caps not to tighten them too much, as to do so may strip the threads.

Never oil or grease brushes as this will prevent the motor from running properly.

FIG. 229. PROPER POSITION OF BRUSH

FIG. 230. RELEASING THE S. U. MOTOR

### Filling the Grease Cups on the S. U. Motor

To refill the grease cups on the S. U. Motor it is necessary to release the motor from the machine. Remove the motor cover and take out the screw in front of the machine. (See Fig. 230). Release the motor by turning it slightly from side to side and at the same time pulling it gently away from the machine.

The motor should be withdrawn only far enough to expose the grease cups. Unscrew the cups one at a time (Fig. 231) and fill with lubricant, without removing the wicks from the cups (Fig. 232).

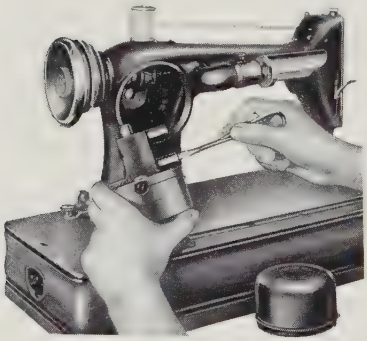


FIG. 231. REMOVING THE GREASE CUPS

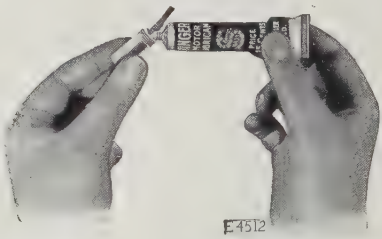


FIG. 232. FILLING THE GREASE CUPS

In replacing the grease cups (Fig. 233) make sure that the wicks enter the small holes which lead to the motor shaft, because it is quite essential that this part of the motor be properly lubricated.

In replacing the motor on the machine it may be necessary to turn the motor slightly to the right or left to allow the holding screw (Fig. 230) to enter the threaded hole in the motor frame.

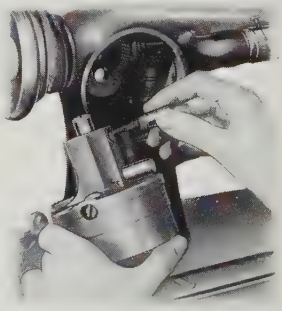


FIG. 233. REPLACING THE GREASE CUPS

### Removing and Replacing Brushes on the S. U. Motor

To remove the brushes, it is necessary to release the motor from the machine, following directions on page 144. Take the motor out far enough to allow easy access to the brushes, which are placed in either side of the motor. Remove the screw which holds

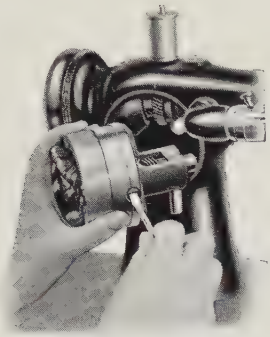


FIG. 234. REMOVING BRUSH CAP

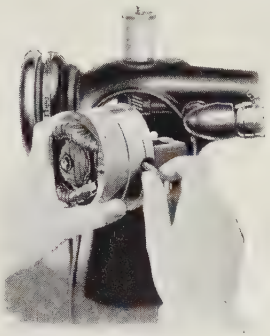


FIG. 235. REPLACING BRUSH

the brush, as in Fig. 234, and note when the brushes come out that the one on the right side of the motor has a silver mark on one side, while the left brush has a gold mark. These brushes should be replaced in the same way and with the painted sides toward the painted mark on the motor.

### Lubricating the S. U. Motor Gears

The motor drives the arm shaft through spiral gears, which should be kept lubricated. It is not necessary to remove the motor to do this. Simply unscrew the spool pin, which is slotted at the top to fit the large screwdriver that comes with the machine, as in Fig. 236. Insert the tip of the Singer Lubricant tube into the spool pin hole (Fig. 237) and squeeze out a small amount of lubricant. Then replace the spool pin.

It is so important that oil should not be used on these gears that this method has been adopted to prevent oiling by mistake when oiling the machine.

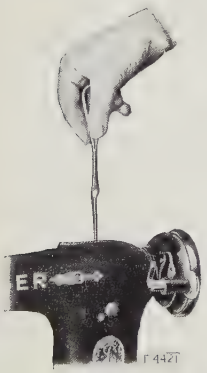



FIG. 236. REMOVING SPOOL PIN

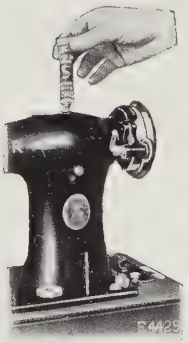


FIG. 237. LUBRICATING THE MOTOR GEARS

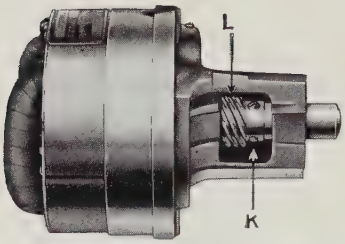



Fig. 238. Fill the Spiral Pinion Well with Lubricant

A small amount frequently is better than a lot of lubricant at long intervals. In this respect motor gears are quite different from grease cups, which should be completely filled but not so often.

Whenever the motor is removed for any reason, especially when filling grease cups, remove the old grease which has worked up out of the well K surrounding the motor pinion (L, Fig. 238) and fill the well with new lubricant.

At the same time squeeze some lubricant between the teeth of bevel gears (M, Fig. 239). Rotate gears part way around by turning balance wheel and apply a little more lubricant, continuing until each tooth has received a small amount of lubricant.

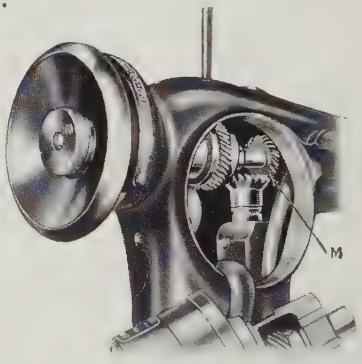



Fig. 239. Upper Bevel Gears

### To Lubricate the Bevel Gears in the 101 Class Machines

There are three pairs of bevel gears in the 101 class machines in addition to the motor gears described in the preceding section of this chapter. All of them should be kept lubricated, as a machine with dry gears makes a peculiar grinding sound quite different from usual sewing machine noises and very annoying to some people. When the gears are properly lubricated the 101 class machines are very quiet and smooth-running.

One pair of bevel gears are shown at M in Fig. 239 and can only be reached by withdrawing the motor. This should be done as described in a previous section entitled "Filling the Grease Cups on the S. U. Motor." Whenever the motor is removed for any reason, always put a little lubricant on these gears as well as the motor gears.

There are two pairs of bevel gears in the bed of the machine, as shown at N and O in Fig. 240. Access to these gears is obtained by tilting the head back and prying the covers off with a screwdriver.

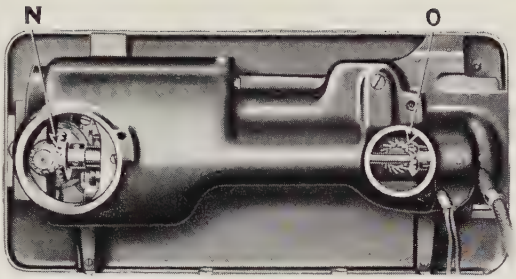



Fig. 240. Lower Bevel Gears

Squeeze on a little lubricant, rotate them part way around by turning the balance wheel and put on a little more lubricant. Be sure to get a little lubricant on each tooth.

### Electrical Connections on the 101 Machine

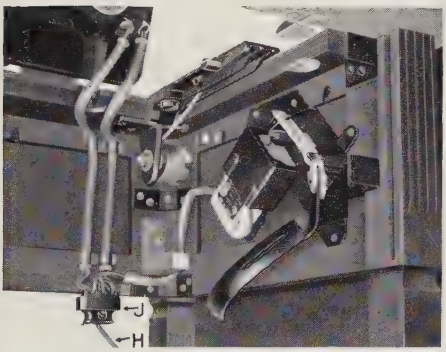



Fig. 241. Electrical Connections on 101 Machines

The connections on the 101-4 machine are made from the underside of the head as shown in Fig. 241, at J. H is the cord for connecting to electric light socket, which plugs into the back of the machine. The 101-12 machine connections are made in the same way. The manner of correcting defective connections is the same for any model.

## THE SINGERLIGHT

### To Attach or Remove the Singerlight

To apply a Singerlight to a Singer machine not previously equipped with one, remove the cover plate on the back of the arm by taking out the thumb screw which holds it in place. Attach the Singerlight by inserting the screw furnished with it into the hole from which the thumb screw was removed and

tighten firmly with a screw driver. If the machine is equipped with a B. U. Motor, attach the eyelets at the end of the Singerlight short cord to the pins at either end of the three-pin terminal, matching up the yellow cord with yellow pin and the red cord with the red pin. To remove the Singerlight, unfasten these eyelets.

The Singer 99 Machine has no cover plate on the back of the arm and requires an adaptor, which is furnished with the Singerlight when so ordered, to provide a place for attaching the light. Instructions for attaching this Adaptor to the arm are furnished with it.

### To Remove and Replace the Singerlight Bulb

Do not attempt to unscrew the Singerlight bulb. It is of the bayonet type and does not unscrew. To remove the bulb, turn the shade around until the pin in the socket appears in the slot of the shade, pull it off the socket and let it hang down as shown in Fig. 243. Then take hold of the end of the bulb, press it toward the socket and turn away from the machine. This will release the bulb pin from the socket, after which both bulb and shade can be withdrawn.

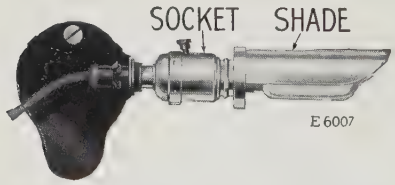



Fig. 242. Singerlight with Shade in Proper Position

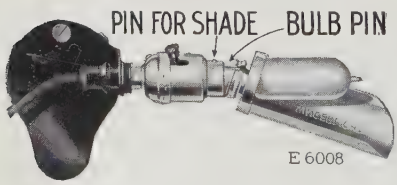



Fig. 243. Singerlight with Shade Down for Removal of Bulb

To replace the bulb, put the base of the bulb through the opening in the shade, insert bulb pins in the socket grooves, with frosted side of bulb down, press in all the way and turn toward the machine. This will lock the bulb pins in their sockets, after which the shade is replaced on the socket and turned up.

## CHAPTER 9

## THE "STUDENT" MODEL SINGER ELECTRIC

The ever increasing demand for more efficient training in Home Economics prompted the making of the "Student" Model —an electric machine especially designed to fill the classroom needs of teachers and students. Since an electric machine can do three times the amount of work of a treadle machine in a given length of time with much less effort, and is the type used in the progressive homes of the country, it is the logical machine to teach the growing girl to use. For this is the type of machine she will be using later on in life. Thus the "Student" Model enables schools to teach their girls to sew the modern, efficient way—by electric machines.

Cabinet No. 401 with two drawers on each side, shown open and closed in Figs. 244 and 245, can be equipped with either 66-6 or 101-4 heads, and is designed for use in schools that are equipped with lockers and whose pupils are not required to carry their books from class to class.

Cabinet No. 402 shown open and closed in Figs. 246 and 247, can likewise be equipped with 66-6 or 101-4 heads and has three drawers at the left hand side, and an open compartment on the right hand side, the same size as the three drawer closed case, which may be used by pupils for books, notebooks, etc., rather than have these articles piled on the machine or left on the floor during the class period.

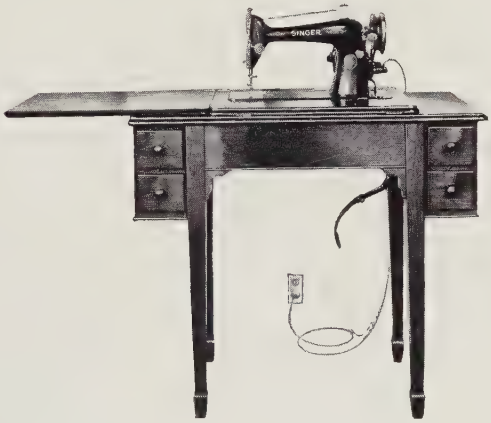



FIG. 244. MACHINE READY FOR USE ON CABINET NO. 401

FIG. 245. CABINET NO. 401 WITH MACHINE CLOSED

Both of the above models are equipped with all of the latest improvements both heads and woodwork, including the new "three pin terminal," standard wiring, adjustable knee control,

Singerlight, carbon control rheostat and other features of the regular family machines. The height of each cabinet is the standard machine height, but the cabinet is so designed that it may be equipped with legs of any length desired.

This has been done on account of the occasional requirement that the machine be lower than the standard height. In practically every case, the adjustable knee lever will meet all requirements as to height of table, but

Fig. 246. Machine Ready for Use on Cabinet No. 402

where it is desired to have a table of slightly different height than the standard, this will be furnished if the exact length of the legs is carefully specified in the order.

Cabinet No. 403, shown in Fig. 248, while not a "Student" Model is another new type popular for school use. It has wooden legs, new style brace and treadle control; can also be equipped with either 66-6 or 15-62 heads. This machine is particularly adapted to trade and technical schools where

Fig. 247. Cabinet No. 402 with Machine Closed

the students expect to make use of the knowledge gained in some sewing occupation or manufacturing trade.

All of the "Student" Model Singer Electric Sewing Machines are equipped with locks for the cover. While a lock is not standard equipment on the No. 403 Cabinet, it will be supplied on request.

Fig. 248. Machine Ready for Use on Cabinet No. 403

## THE FOLLOWING CLASSROOM FEATURES OF THE "STUDENT" MODEL WILL BE OF INTEREST TO ALL TEACHERS OF MACHINE SEWING

1—Singerlight—providing individual light, without glare or shadow, for each student; meeting the classroom problem of "lighting." The Singerlight is placed at the back of the machine so as to permit the free passage of material under the arm.

2—Adjustable Knee Control—meeting the classroom problem of "seating." The position and adjustable length of this control make it possible to accommodate any sized child. The correct adjustment may be quickly and easily made by the student herself, and, because of its adaptability, is of increased value in the classes for crippled children.

3—Safety Lock—on cover, insuring the mechanism against vandalism or accident.

4—Open Compartment for storage of students' books, materials, etc., with three ample drawers for accessories, etc. (Cabinet Table No. 402); or if preferred, two drawers on each side (Cabinet Table No. 401).

5—The cover, when opened, provides extra length for supporting and handling large or bulky materials.

6—When closed, the equipment forms a flat topped, smooth table, of convenient height, which may be used as an auxiliary desk during other classroom activities.

7—Choice of Rotary or Oscillating Sewing Mechanisms—quiet, light running and free from vibration.

8—Large Capacity round bobbin, located horizontally under the slide, within plain sight and easy reach.

9—Automatic Bobbin Ejector—a touch of the finger raises the bobbin to a position where it may be instantly removed.

10—The Singer Automatic Bobbin Winder, with automatic release which prevents winding the bobbin too full.

11—Upper and lower tensions easily regulated to suit any kind of material, making possible a beautiful and elastic lock stitch on the lightest or heaviest textures.

12—Automatic Tension Release preventing puckered seams or broken threads and saving time and effort.

13—Concealed needle bar, eliminating the distraction of motion before the eyes of the operator or student.

14—Thread Cutter, located just above the presser foot, making possible the withdrawal of material and the cutting of threads with one motion.

15—Choice of built-in or attached motor, each entirely safe, fully enclosed and dust-proof, with simplified wiring system and three-pin terminal approved by the National Board of Fire Underwriters.

16—Special legs of any desired height are furnished, bringing the sewing surface to the proper level for pupils of any age or size.

# INDEX


Adjustments of sewing machine head
- bobbins, stop motion screw for winding 9, 10
- bobbin winder, increasing pressure on, 11
- bobbin winder, replacing rubber ring, 11
- bobbin winder thread guide, 11
- clamp washer, inspecting and replacing, 10
- needle, proper position for setting, 13
- presser bar, pressure on, 18
- stop motion clamp, removing screw, 10
- stop motion screw for winding bobbin, 9, 10
- stitch, regulating length of, 17, 18
- tension, under thread, 14, 15, 33, 37, 45
- tension, upper thread, 14, 15, 33, 37, 45

Adjustments of stand
- belt, steps in placing, 22, 23
- belt, to shorten or replace, 22, 23
- belt shifter, 20

Adjustments of attachments
- adjustable hemmer, setting for wide hem, 75
- bias cutting gauge, 53
- binder, for stitching, 56
- edge-stitcher, for stitching, 110
- buttonhole, 117, 118
- hemstitcher to machine, 114
- hemmer, for width of hem, 73
- quilter, for spacing, 105
- ruffler, for gathering, 87
- ruffler, for shirring, 102, 103
- ruffler, for group plaiting, 95
- ruffler, for plaiting, 92
- shirring plate to machine, 102
- tucker, for marking, 82

Adjustments of attachments, cont'd
- tucker scale, 78, 79
- tucker, size of tuck and space, 78, 79
- underbraider to machine, 107

Adjustment of Singerlight
- replacing bulb, 148

Adjustments of motor, B. U. (bracket universal) 139-144
- attaching to machine, 139, 140
- belt, placing on, 140
- belt, regulating tension on, 140
- brushes, removing and replacing, 142, 143
- brushes, proper position of, 143
- cord attached to machine, 140
- grease cups, filling, 142
- knee lever attached, 141
- lubricating, 142
- releasing from machine, 142, 143

Adjustments of motor, S. U. (Singer universal) 144-147
- brushes, removing and replacing, 145
- grease cups, filling, 144
- releasing motor, 144

Adjusting gathers on thread, 88

Attachments for sewing machines
- bias cutting gauge, 53, 54, 127
- binder, 54-66
- blind stitch braider, 122, 127
- braiding presser foot, 120, 127
- buttonhole, 116-119, 127
- cloth guide, 17, 127
- darner, 97, 101, 127
- edge-stitcher, 110-113, 127
- embroidery, single thread, 124, 125, 127
- embroidery, double thread, 125, 126, 127
- feed cover plate, 98, 127
- flange hemmer, 120, 127
- foot hemmer, 67-72

Attachments for sewing machines, continued
gathering foot, 104, 127
gauge presser-foot and adjustable guides, 127
hemmers, 67-76
hemmer, adjustable, 72-75
hemstitcher, 114, 115, 127
motor, 128-146
needle threader, 127
presser foot for edge stitching, 121, 127
quilter, 105, 127
ruffler, 85, 96
shirring plate, 102, 103, 127
Singerlight, 130, 131, 147, 148
special labor saving, 97-127
stripper foot, 97, 98, 127
tubular trimmer, 123, 127
tucker, 77-84
underbraider, 107-109, 127

Belt
equipment for adjusting, 23
hook, 127
punch, 23, 127
shortening or replacing, 22, 23

Bias cutting gauge, 53, 54, 127

Bias folds, applied with edge-stitcher, 112

Bias strips
cut with gauge, 53, 54
joining, 54

Binder attachment, 53-66

Binder
adjustment and operation, 55
attaching to machine, 55
braid, proper width, 56
bound buttonholes, 62, 63
button loops, 61
cut-in buttonholes, 63
folded binding, use with, 56
French fold applied to curve, 58
garments finished with binding, 66
inserting binding, 55-57

Binder, cont'd
inside curves, 58
lattice effect with binding, 65
material for use with, 53-55
military braid applied, 65
neck edge of garment, finishing, 64
outside curve, adjustment, 58
outside curve bound, 58
placket bound, 59, 60
ribbon, proper width, 56
rick-rack braid and binding, 63, 64
scallops bound, 60
seams, open bound, 57
seams, plain bound, 57
soft material bound, 58
stitching, adjusting for, 56
square corner bound, 60, 61
square corner bound, hand mitered, 61

Blind stitch braider, 122, 127

Bobbins, winding properly, 10, 11

Bobbin winder, oiling points, 20

Bound buttonholes, made with binder, 62

Bound scallops, 60

Braid applied to net or chiffon, 109

Braid, for binder, use with, 56

Braid, military, applied, 65, 112

Braider, under, 107-109, 127

Braiding
braid suitable for use with braider, 107
designs copied, 108
ends of braid fastened, 109
net on fine material, 109

Brushes, B. U. motor
position in motor, 143
removing and replacing, 142, 143

Brushes, S. U. motor
position in motor, 145
removing and replacing, 145

Buttonhole attachment, 116-119, 127

Buttonholes
bound with binder, 62

Buttonholes, cont'd
cut-in, made with binder, 63
made with attachment, 116-119
Button loops, made with binder, 61
Chain stitch machine, 47-52
Clamp washer, inspecting and replacing, 9, 10
Cleaning and oiling the sewing machine, 19-21
Cloth guide, 17, 127
Cross tucking, 83
Darner, large, 127
small, for stockings, 127
Darning
directions for, 97-101
preparing material for, 99-101
stockings, 100, 101
table linen and towels, 98-100
threading machine for, 98
Edge-stitcher
attachment, 110-113, 127
bias folds applied, 112
French seams made, 113
lace edges sewn together, 110, 111
lace insertion, set in, 111
military braid applied, 112
piping, 111, 112
use of, 110-113
wide hem made, 113
Electrical connections, B. U. motor, 140
101 machine, S. E. motor, 147
Electric light for sewing machine, 130, 131, 147, 148
Electric sewing machines, 128-151
advantages of, 128
library table, 135
portable, 132-134, 137
school models, 149-151
Electric wiring for class room, 140
Embroidery attachment
single thread, 124, 125, 127
double thread, 125-127
Feed cover plate, 98, 127
attaching to machine, 98
Feeding improperly, sewing machine, 25
Felled seams, foot hemmer, 70
Fine tucking, 83
Flange hemmer, 120, 127
Foot hemmer, 67-72
French seam, made with edge-stitcher, 113
Gathering foot, 104, 127
Garments, bound, list of, 66
hemmed, list of, 76
plaited, list of, 96
ruffled, list of, 96
tucked, list of, 84
Gauge presser foot and adjustable guides, 127
Gears, lubricating, 101 machine, 146
Hemmed seam, foot hemmer, 69
Hemmers, 67-76
adjustable, 72-75
hemming and applying lace, 71
curved or bias edges, 72
fine material, 72
foot hemmer, 67-72
felled seam with foot hemmer, 70
glass toweling, 74
material inserted in hemmer, 67, 73
overseams, 69
plain hem with foot hemmer, 68
proper point to start, 67, 73
soft material, 74
table linen, preparing for hand hemming, 74
wider than one inch with hemmer, 75
Hems, wide, with edge-stitcher, 113
Hemstitching
attachment, 114, 115, 127
French seam finish, 115
with presser foot, 115, 116
Lace edges sewn together, 110, 111

Lace insertion set in, 111
Looping stitches, 24
Linen, darning 98-100
Lubricating
gears, 101 machine, 146
B. U. motor, 142
S. U. motor, 144, 145
Machine working heavily, 25
Military braid, applied with binder, 65
Motor
adjustments of, 139-147
current consumed, 130
sewing machine, 128-148
speed of, 129, 130
types of, 131-136
wiring for class rooms, 138
Motors, B. U.
adjustments of, 139-143
lubricating, 142
releasing from machine, 143
Motor, S. U.
adjustments of, 144-146
lubricating, 144, 145
releasing from machine, 144
Needles
breaking, 24
correct size for thread (machines 66, 99, 101, 127, 128), 12
correct size for thread, 24 class, 52
setting properly, 13
testing for straightness, 13
Needle threader, 127
Noisy treadle, 25
Oil can, 127
Oiling
and cleaning machine, 19-21
bobbin winder, 20
buttonhole attachment, 118
machine head, 19, 20
preparing for, 19
removing gummed oil, 21
ruffler, 86
stand, 21
tucker, 78
Parts of lock stitch head, 27, 46
chain stitch head, 47
Piping with edge-stitcher, 111, 112
Plackets bound, 59, 60
Plaiting
adjusting ruffler for, 92
and sewing to garment, 92, 93
bands for trimming, 94
finished with facing, 93
group, 95
lace or ribbon, 93, 94
rosettes, 94
Portable electric sewing machines, 132-134, 137
Portable machines, table for, 137
Presser bar, adjusting pressure on, 18
Presser foot for edge-stitching, 121, 127
Presser feet for 66 class machines, 26
Puckered seams, 25
Puffling made with ruffler, 91
Quilter, 105, 127
Ribbon
for use with binder, 56
plaited, 93, 94
puffed, 91
Rick-rack braid applied with binder, 63, 64
Rosettes
plaited, 94
Ruffler, 85-96
adjusting for gather, 87
adjusting for plaiting, 92
adjusting lever, 85, 86
adjusting screw, 85, 86
attaching to machine, 86
bands plaited, 94
foot, 85, 86
fork arm, 85, 86
gathers, making, 87
gathers, sewing to garment, 88
heading guide, 85, 86
lace plaited, 93, 94
materials inserted, 87
oiling, 86
parts and their use, 85, 86

Ruffler, cont'd
piping ruffles, 91
plaiting, 92-95
plaiting and finishing seam, 92
plaiting, group adjustment, 95
prepared for shirring, 102, 103
projection, 85, 86
separator blade, 85, 86
separator plate, 85, 86
tuck shirring, 90, 91
ribbon plaited, 93, 94
ribbon puffed, 91
rosettes of plaiting, 94
ruffling blade, 85, 86

Ruffling
and sewing to garment, 88
gathers, 87
fullness test, 87, 88
piped, 91
rows applied, 90
seam finished with binding, 89, 90
seam finished with facing, 89
seam finished, French, 89

Scallops, bound, 60

Screwdriver, large, 127
small, 127

Seams
binding material, 57
bound with binder, 57
finishing, 16
felled with foot hemmer, 70
French, made with edge-stitcher, 113
hemmed with foot hemmer, 69
hints for sewing, 16
open bound with binder, 57
plaiting finished with facing, 93
ruffled with binding, 89, 90
ruffling with facing, 89
ruffling, French, 89
stitching bias, 16
stitching, starting point, 15
stitching, straight, 8, 9, 17
stitching straight to bias edge, 16
stopping point, 16

Sewing, preparing machine for, 9-15
Sewing machine, parts of
arm, 27
balance wheel, 27
band wheel, 28, 29
bed, 27
bed slide, 27, 28
belt shifter, 20, 29
bobbin, 27, 28
bobbin winder, 27
cabinet work, 28, 29
dress guard, 29
face plate, 27, 28
feed dog, 27, 28
head, 27
legs, 29
lower tension, 27, 28
needle bar, 27, 28
pitman, 28, 29
presser bar, 27, 28
rotary or oscillating hook, 27, 28
shuttle or bobbin case, 27, 28
stand, 28, 29
stitch regulator, 27
thread take-up, 27, 28
throat plate, 27, 28
treadle, 28, 29
upper tension, 27, 28
Shirring
material prepared for, 102
tuck, 90, 91
plate, 102
Shuttle
127 machine, how to remove, 33
how to replace, 33
Silk or chiffon tucked, 83
Singerlight
replacing bulb, 148
to attach or remove, 147, 148
Skipping stitches, 24
Slide plate, replacing on 66 machine, 26
Stiletto, 127
Stitching
ornamental, 106
practice with paper, 8, 9
straight seam, 17
square corner practice, 8, 9

Stitch
formation of lock stitch, 29
formation, chain stitch machine, 50, 51
formation, Singer machines, 27-52
formation, 15 class machine, oscillating shuttle, 38, 39
formation, 66 class machine, oscillating hook, 34, 35
formation, 101 class machine, rotary hook, 42, 43
formation, 127 class machine, vibrating shuttle, 30, 31
length for tucking, 79
regulating length of, 17

Stockings, darned on machine, 100, 101

Stop motion, removing clamp screw, 9, 10

Stop motion screw, adjusting for winding bobbins, 9, 10

Stripper foot, attaching to machine, 97, 98
use of, 97-101

"Student" models, 149-151

Tensions
adjusting, 14, 15
lower, proper adjustment, 14, 15
regulating 15 class machine, 41
regulating 66 class machine, 37
regulating 101 class machine, 45
regulating 127 class machine, 33
upper, proper adjustment, 14, 15
testing upper and lower, 15

Testing, ruffler for fullness, 88
tensions, upper and lower, 15

Thread, breaking, under, 24
breaking, upper, 23

Threading
chain stitch machine, 49
15 class machine, 40
66 class machine, 36
101 class machine, 44
127 class machine, 32

Treadle, noisy, 25

Treadle, practice for beginners, 7, 8

Trimming
bands of plaiting, 94
bias folds, 112
binding, lattice effect, 65
braiding, 107-109
button loops made with binder, 61
French folds with binder, 58
hemstitching with attachment, 114, 115
hemstitching with presser foot, 115, 116
insertion set in with foot-hemmer, 71
insertion set in with edge-stitcher, 111
laces sewn together, 110, 111
lattice effect with binding, 65
military braid, 65, 110
neck edge, plaiting and binding, 64

Trimmings
ornamental stitching, 106
piping with edge-stitcher, 110, 111
plaiting applied, 92, 93
plaiting in groups, 95
plaiting with ruffler, 92-95
ribbon puffed, 91
rick-rack braid and binding, 63, 64
ruffling, 87-91
ruffles, applied, 88-90
ruffling in rows, 90
ruffles piped, 91
ruffling sewn to garment, 88
scallops bound, 60
shirring in rows, 102-105
tuck shirring, 90, 91
tucking, making of, 77-84

Troubles
feeding improperly, 25
lower thread breaking, 24
machine working heavily, 25
needles breaking, 24
seams puckered, 25
stitches skipping, 24
stitches looping, 24
thread breaking, upper, 23
treadle noisy, 25

Tubular trimmer, 123, 127
Tucks, table for setting width of, 79
Tucker
adjusting for mark, 82
adjusting screw, tuck guide, 77
adjusting screw, space scale, 77
attachment, 77-84
attaching to machine, 78
guide, 77
material inserted, 80
marking lever, 77
oiling, 78, 80
parts of, 77
Tucker, cont'd
scale, 77
scale adjustment, 78, 79
space scale, 77
tucking without marking, 82
Tucking
fine material, 83
cross, 83
samples of, 81, 84
silk or chiffon, 83
stitch, proper length, 79
Underbraider, 107-109, 127